SOIL SURVEY OF PARTS OF WALKER AND JEFFERSON COUNTIES, ALABAMA

prepared for

BUREAU OF LAND MANAGEMENT

by

U. S. Department of Agriculture,
Soil Conservation Service,
Auburn, Alabama

PART 2 of 2

CONTENTS

	Page
Index to Soil Map Units	ii
Summary of Tables	iii
Status of Correlation	1
Location of Area	2
General Nature of the Area	3
Drainage	3
Geology of Soils	3
Physiography and Relief	3
Farming	3
Natural Resources	4
Climate	4
Soil Maps for Detailed Planning	5-6
Status of Soil Series	30
Soil Series and Morphology	31-53
Classification of the Soils	54-55
Genetic Key to Soil Series	56
Prime Farmland Units	57
Tables	58-80
References	81
Glossary	82-95

INDEX TO SOIL MAP UNITS

Page

2 - Allen sandy loam, 6 to 10 percent slopes 8
20 - Brilliant very shaly loam, 15 to 60 percent slopes 10
21 - Hector-Rock outcrop complex, 15 to 45 percent slopes. 11
3 - Mantachie silt loam, frequently flooded. 12
4 - Montevallo-Townley association, steep. 13
5 - Nauvoo sandy loam, 2 to 6 percent slopes 15
6 - Nauvoo sandy loam, 6 to 10 percent slopes. 17
7 - Nauvoo-Townley association, hilly. 19
10 - Palmerdale very shaly loam, 15 to 60 percent slopes 20
13 - Pruitton-Whitwell association. 21
11 - Smithdale-Pikeville association, hilly 23
17 - Townley silt loam, 2 to 6 percent slopes 25
18 - Townley silt loam, 6 to 15 percent slopes. 27
12 - Wynnville loam, 2 to 6 percent slopes 28

SUMMARY OF TABLES

Page

Acreage and proportionate extent of the soils (Table A). 58
Capability and yields per acre of crops and pasture (Table B3) 59
Woodland understory vegetation (Table D) 60
Woodland management and productivity (Table E) 61
Wildlife habitat potentials (Table F). 63
Recreational development (Table G) 64
Engineering properties and classifications (Table H) . 66
Physical and chemical properties of soils (Table J). . 68
Water features (Table K1). 70
Soil features (Table K2) 71
Sanitary facilities (Table L). 72
Building site development (Table M). 74
Construction materials (Table N) 76
Water management (Table P) 78
Classification of the soils (Table Q). 80

STATUS OF CORRELATION

A formal initial, progressive, and final review was conducted by the Soil Conservation Service (SCS) with a representative of the Bureau of Land Management (BLM) participating. In conjunction with the final review, the final field correlation was also conducted on October 5, 1978. The final correlation was conducted by a State Soil Scientist Staff member of SCS in Alabama. Copies of the report were forwarded to the Director of Eastern States Office of BLM, the Alabama BLM representative, and other interested parties.

A Jefferson County soil survey was published in 1908 and one for Walker county in 1915. However, these surveys were very general and outdated. (5)(6) They are also out of print and not available for distribution. This more recent survey provides soils information in more detail. It is also compatible with present day land uses.

LOCATION OF AREA

Jefferson and Walker Counties are in the north central part of Alabama, with Walker County being west-northwest of Jefferson County. Both counties are in the southern part of the Appalachian Ridges and Valleys Land Resource Area. The ridges and valleys of Jefferson County have a northeast to southwest orientation, whereas in Walker County they mainly are northwest to southeast. Elevation in the survey area ranges from slightly over 800 feet in the northwestern part of Walker County to about 250 feet where the Black Warrior River flows out of Walker County.

GENERAL NATURE OF THE AREA

Drainage

Most of the survey area is drained by the Black Warrior River and its tributaries. An exception is the northwestern part of the area in Walker County where Goodwin and Mallards Creeks drain to the west into the Sipsey River. The main tributaries of the Black Warrior River are: Mulberry, Locust, and Sipsey Forks and Blackwater, Lost, and Wolf Creeks.

Generally, that part of the survey area in Walker County drains in a southeasterly direction, while the Jefferson County part drains in a southwesterly direction.

Geology and Soils

The Pottsville Formation is the major geological formation in the area. Other significant formations are: the Coker Formation which is in small isolated areas in the western part of Walker County and terrace deposits and alluvium which are throughout the survey area on valley floors. (4) All the soils associated with these formations are low in natural fertility and organic matter.

Physiography and Relief

The area is characterized by narrow v-shaped valleys with steep, highly dissected valley walls and relatively narrow, winding ridgetops. The flood plains are generally narrow, nearly level to gently sloping, and often they are intermittent. The flood plains are often terminated where the valley walls come together forming a gorge. The valley walls may have as much as 200 feet difference in elevation from the bottom to the top of wall. The ridgetops are somewhat broader in the northwest part of the survey area.

Farming

For the past several decades, the acreage of row crops in Walker and Jefferson Counties has declined. The latest figures show about 1 percent of Walker County as being in row crops. Presently, only 114 acres of cotton are grown in the county. The main row crops are corn and soybeans. About 75 percent of Walker County is classified as woodland and about 15 percent as hayland and pastureland. The remainder is in miscellaneous uses.

Natural Resources

Rich coal deposits are throughout much of Walker and Jefferson Counties and are a significant resource. Soil is another important natural resource that should not be overlooked. Timber produced in woodlands is a marketable product that is derived from the soil. Although the soils in the survey area are not intensively row cropped, their potential for producing food and fiber are important.

Climate

The climate in Walker and Jefferson Counties is temperate and humid. Rainfall generally is well distributed throughout the year. Usually, winters are not severe, and extended periods of severe cold are rare. Rainfall averages about 54 inches per year. There is some snowfall in most years, but it does not significantly affect overall precipitation. There is a probability of 1 year in 10 of temperature of 32°F later than April 21 and a probability of 1 year in 10 of temperature of 32°F earlier than October 19. Climatic data is based on records from nearby Blount County. (1)

Soil maps for detailed planning

The map units shown on the detailed soil maps at the back of this publication represent the kinds of soil in the survey area. They are described in this section. The descriptions together with the soil maps can be useful in determining the potential of a soil and in managing it for food and fiber production; in planning land use and developing soil resources; and in enhancing, protection, and preserving the environment.

Preceding the name of each map unit is the symbol that identifies the soil on the detailed soil maps. Each soil description includes general facts about the soil and a brief description of the soil profile. In each description, the principal hazards and limitations are indicated and the management concerns and practices needed are discussed.

The map units on the detailed soil maps represent an area on the landscape made up mostly of the soil or soils for which the unit is named. Most of the delineations shown on the detailed soil map are phases of soil series.

Soils having profiles that are almost alike make up a soil series. Except for allowable differences in texture of the surface layer or of the underlying substratum, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement in the profile. A soil series commonly is named for a town or geographic feature near the place where a soil of that series was first observed and mapped. The Nauvoo series, for example, was named for the town of Nauvoo in Marion County, Alabama.

Some map units are made up of two or more dominant kinds of soil. Such map units are called soil complexes, soil associations, and undifferentiated groups.

Soil complex consists of areas of two or more soils that are so intricately mixed or so small in size that they cannot be shown separately on the soil map. Each area includes some of each of the two or more dominant soils, and the pattern and proportion are somewhat similar in all areas. Hector-Rock outcrop complex is an example.

Soil association is made up of soils that are geographically associated and are shown as one unit on the map because it is not practical to separate them. A soil association has considerable regularity in geographic pattern and in the kinds of soil that are a part of it. The extent of the soils can differ appreciably from one delineation to another; nevertheless, interpretations can be made for use and management of the soils. Smithdale-Pikeville association is an example.

An undifferentiated group is made up of two or more soils that could be mapped individually but are mapped as one unit because there is little value in separating them. The pattern and proportion of the soils are not uniform. An area shown on the map has at least one of the dominant (named) soils or may have all of them. There are no undifferentiated groups in this survey area.

Most map units include small scattered areas of soils other that those that appear in the name of the map unit. Some of these soils have properties that differ substantially from those of the dominant soil or soils and thus could significantly affect use and management of the map unit. These soils are described in the description of each map unit. Some of the more unusual or strongly contrasting soils that are included are identified by a special symbol on the soil map.

The acreages of proportionate extent of each map unit are given in table A and additional information on properties limiations, capabilities, and potentials for many soil uses is given for each kind of soil in other tables in this survey. (See "Summary of tables.")

SOIL MAP UNITS

SOIL MAP UNITS

(2) Allen sandy loam, 6 to 10 percent slopes.

This sloping to moderately sloping, deep, well drained soil is on foot slopes. Areas range from about 5 to 50 acres or more.

Typically, the surface layer is grayish brown sandy loam, about 2 inches thick. The subsurface layer is yellowish brown sandy loam, about 7 inches thick. The upper part of the subsoil is yellowish red loam to a depth of 17 inches. The middle part of the subsoil is red clay loam with some strong brown mottles that extends to a depth of 68 inches. The lower part is red sandy clay loam, with a few strong brown mottles and extends to a depth of 84 inches or more.

Included with this soil in mapping are a few areas of a soil similar to Allen but it has stratified shale at about 60 inches. Also, included are small areas of Hector and Montevallo soils. A few areas of Pruitton and Whitwell soils are in drainageways. Included soils make up about 15 percent of this unit.

Air and water move through the soil at a moderate rate and surface runoff from cultivated areas is medium to rapid. The soil is strongly acid or very strongly acid throughout, except for surface layers that have been limed. It has high available water capacity. This soil has good tilth and can be worked throughout a wide range of moisture content without crusting or clodding. The root zone is deep and can be penetrated by plant roots. However, a plow pan can develop unless depth of plowing is varied.

Most areas of this unit are in woodland, but the soil is suited to growing cotton, corn, soybeans, small grain, grasses and legumes. If the soil is used for cultivated crops, the hazard of erosion is moderate to severe. However, soil loss can be reduced by terraces, farming on the contour, minimum tillage, grassed waterways, and winter cover crops. Returning crop residue to the soil will help maintain good tilth and increase water infiltration. Cropping systems are needed that include the use of perennial sod crops about 2 years in 4. This unit does not qualify for prime farmland.

Loblolly, shortleaf, and Virginia pines grow well on this soil. There are no significant management problems when growing these trees.

This soil has good potential for building site development. On the more sloping areas, slope becomes a problem for septic tank absorption fields, building foundations, and other uses. This problem can be overcome with proper design and installation of structures. Excessive seepage from lagoons can be prevented by special treatment to seal the bottom of the lagoon. Potential for topsoil use is fair because of slope. (Capability subclass IIIe; Woodland suitability group 3o7)

(20) Brilliant very shaly loam, 15 to 60 percent slopes.

This deep, somewhat excessively drained soil formed in material from surface strip mining of coal. Most areas have not been smoothed and occur as a series of cone shaped heaps connected by very narrow ridges. Most areas have open pits and a few areas have high walls.

Typically, the surface layer is very dark gray very shaly loam, about 7 inches thick. The underlying material is dark gray very shaly loam to a depth of 84 inches, or more.

Included with this soil in mapping are a few small areas of Montevallo, Nauvoo, Palmerdale, and Townley soils. Also, included are a few areas of Brilliant soils with slopes less than 15 percent.

This soil has moderately rapid permeability and has a very low available water capacity. Reaction is medium acid through moderately alkaline.

Potential is very poor for cultivated crops and pastures. Steep slopes and the amount and size of coarse fragments on the surface makes it impracticable to use this soil for cultivated crops and pastures. It has fair potential for growing American sycamore, loblolly pine, Virginia pine, and eastern cottonwood trees. The erosion hazard is severe. In addition, the use of equipment is severly restricted by slope. The seedling mortality is severe. When graded and smoothed, this soil has fair potential for selected grasses and legumes. This soil does not qualify for prime farmland.

This soil has very poor potential for building site development and septic tank absorption fields because of slope. Potential for topsoil use is poor because of rock fragments, borrow areas are difficult to reclaim, and slope. (Capability subclass VIIs; Woodland suitability group 3x9)

(21) Hector-Rock outcrop complex, 15 to 45 percent slopes.

This map unit consists of shallow, well drained, loamy Hector soils and outcrops of sandstone bedrock. It is on mountainsides. Areas of this unit range from about 10 to 100 acres in size, and they are about 50 percent Hector soils and 26 percent Rock outcrop. Individual areas of Hector soils and Rock outcrop are so intricately mixed that it is not practical to seperate them in mapping.

Typically, the Hector soils have a brown sandy loam surface layer about 5 inches thick. The subsoil, to a depth of 18 inches, is yellowish brown sandy loam. Sandstone bedrock is at 18 inches.

Included in mapping are small areas of Allen and Nauvoo soils. The deep, well drained Allen soils are on foot slopes and make up about 7 percent of this unit. The deep, well drained Nauvoo soils are on narrow ridgetops and make up about 17 percent of the unit.

Permeability of the Hector soils is moderately rapid and the available water capacity is low to very low. The surface layer is slightly acid to strongly acid and the subsoil is strongly acid or very strongly acid.

This map unit has poor potential for cultivated crops and pasture plants. Steepness of slopes, Rock outcrop, and droughtiness are severe limitations for these uses. Soils in this unit should be protected with a permanent cover such as trees. Loblolly and Virginia pines are best suited for this unit. The erosion hazard is severe because of slope and the use of equipment is severly restricted by slope and Rock outcrops. The seedling mortality rate is severe because of low available water capacity. This soil does not qualify for prime farmland.

The soils in this unit have poor potential for building site development, especially if onsite waste disposal systems are used. Steepness of slopes and shallow depth to bedrock are problems that are difficult to overcome. Included areas of Allen and Nauvoo soils have better potential for building site development but onsite investigation is necessary to identify these soil areas. Potential for topsoil use is poor because of steep slopes, thin available soil material, and rock fragments. (Capability subclass VIIe; Woodland suitability group 4d3)

(3) Mantachie silt loam, frequently flooded.

This nearly level to gently sloping, deep, somewhat poorly drained, moderately permeable soil is on flood plains. Slopes range from 0 to 3 percent. Mapped areas range from about 10 acres to several hundred acres in size. This soil is subject to frequent flooding.

Typically, the surface layer is grayish brown silt loam about 5 inches thick. The upper part of subsoil, to a depth of 18 inches, is mottled yellowish brown, grayish brown and light brownish gray silt loam. The lower part of the subsoil, to a depth of 60 inches, is light brownish gray mottled with yellowish brown, silt loam.

Included with this soil in mapping are some areas of Ochlockonee, Pruitton, and Whitwell soils. Also, included are a few small areas of Mantachie soils that are partially protected from flooding and have been artifically drained. Included soils make up about 25 percent of the unit.

Air and water move through the soil at a moderate rate but during periods of high rainfall the water table is near the surface. Surface runoff is slow. Reaction is strongly or very strongly acid throughout, except for surface layers that have been limed. It has high available water capacity. Root development may be restricted in the early growing season because of the high water table.

Potential is poor for cultivated crops because of the hazard of flooding. In addition, the high water table restricts the variety of crops that can be grown. Areas of this soil that have been partially protected from flooding have been artifically drained have good potential for row crops. Cotton, corn, and soybeans are suitable crops in these areas. This soil does not qualify for prime farmland.

Most of the map unit is used as woodland or pasture. Grass species that are tolerant to wetness should be selected. Potential is fair for pasture. It has good potential for loblolly pine, cottonwood, sweetgum, green ash, and yellow-poplar. Seedling mortality, and windthrow hazard are severe management problems because of wetness. The use of equipment is severly restricted because of flooding and wetness.

This soil has poor potential for most building site development and for septic tank absorption fields because of the hazard of flooding and wetness. Potential for topsoil use is fair because of rock fragments. (Capability subclass Vw; Woodland suitability group 1w9)

(4) Montevallo-Townley association, steep.

This map unit consists of shallow, well drained Montevallo soils on ridges and steep side slopes, and moderately deep, well drained Townley soils on ridgetops and more level side slopes. Mapped areas of this unit range from about 10 to several thousand acres. It is about 41 percent Montevallo soils and 24 percent Townley soils. Because of the rough terrain much of this unit is not readily accessible, and it is not practical to separate these soils in mapping. Slopes range from 15 to 45 percent.

Typically, the Montevallo soils have a dark grayish brown shaly silt loam surface layer about 4 inches thick. The subsoil, to a depth of 15 inches, is brown very shaly silt loam. The underlying material is shale.

Typically, the Townley soils have a dark grayish brown silt loam surface layer about 5 inches thick. The subsoil, to a depth of 31 inches, is yellowish red silty clay. The underlying material is weathered shale.

Minor soils in this unit include small areas of Hector, Nauvoo, Pruitton soils, and a soil similar to Nauvoo except it is more clayey in the lower part of subsoil. Hector soils are on upper side slopes and make up about 6 percent of the unit. Nauvoo soils and soils similar to Nauvoo are on ridgetops and side slopes, and make up about 20 percent of the unit. The Pruitton soils are in narrow drainageways and make up about 9 percent of this unit.

Montevallo soils are moderately permeable and Townley soils are slowly permeable. Montevallo soils range from medium acid through very strongly acid, while the Townley soils range from strongly acid through extremely acid. Montevallo soils have a very low available water capacity, and Townley soils have low to moderate available water capacity.

This unit had poor potential for cultivated crops and fair to poor potential for pastures. Steep slopes, a severe erosion hazard, and the very low available water capacity of the Montevallo soil are severe limitations for cultivated crops and pastures. Most of the unit is in woodland and potential is fair for loblolly and Virginia pines. This soil does not qualify for prime farmland.

This unit has poor potential for building site development and septic tank absorption fields because of steep slopes and shallow depth to shale. The slow permeability of the Townley soils is an additional limitation for septic tank absorption fields. Potential for topsoil is poor because of borrow areas being difficult to reclaim, rock fragments, thin available soil material, and steep slopes. (Capability subclass VIIe; Woodland suitability group Montevallo part 5d3; Townley part 4r2)

(5) Nauvoo sandy loam, 2 to 6 percent slopes.

This gently sloping, deep well drained soil is on ridgetops and side slopes. Mapped areas range from about 5 to 150 acres or more.

Typically, the surface layer is brown sandy loam about 5 inches thick. The upper part of the subsoil is yellowish red sandy clay loam and the lower part of the subsoil is yellowish red sandy loam. The subsoil extends to a depth of 42 inches. The underlying material is soft sandstone that extends to a depth of 50 inches or more.

Included with this soil in mapping are a few small areas of a soil similar to Nauvoo except that it is more clayey in the lower part of the subsoil. Also included are areas of a soil similar to Nauvoo except it is shallower to hard rock. A few small areas of Townley and Wynnville soils are also included. Included soils make up about 15 percent of this unit.

Water and air move through the soil at a moderate rate and surface runoff from cultivated areas is medium. Reaction is strongly acid or very strongly acid throughout, except for surface layers that have been limed. It has a moderate available water capacity. The tilth is good and the soil can be worked throughout a wide range of moisture content without clodding or crusting. Generally, root development is not restricted in the upper 40 inches of the soil. However, a plow pan is likely to develop unless depth of plowing is varied.

This soil has good potential for growing cotton, corn, soybeans, small grain, and grasses and legumes for hay and pasture. If the soil is used for cultivated crops, the hazard of erosion is moderate. However, soil loss can be reduced by terraces, farming on the contour, minimum tillage, grassed waterways, and winter cover crops. Returning crop residue to the soil helps to maintain good tilth and increase water infiltration. Cultivated crops can be grown each year if good conservation practices are followed. This soil will qualify for prime farmland.

Potential is good for loblolly and Virginia pines. There are no significant management problems when growing these trees.

This soil has good potential for building site development. Depth to rock is a moderate limitation for septic tank absorption fields, but this can be overcome by increasing the size of the absorption area. Excessive seepage from sewage lagoons can be prevented by special treatment to seal the bottom of the lagoon. Potential for topsoil use is fair because of rock fragments. (Capability subclass IIe; Woodland suitability group 2o1)

(6) Nauvoo sandy loam, 6 to 10 percent slopes.

This sloping to strongly sloping, deep, well drained soil is on ridgetops and side slopes. Mapped areas range from about 5 to 150 acres or more.

Typically, the surface layer is dark grayish brown sandy loam about 3 inches thick. The subsurface layer is brown sandy loam about 5 inches thick. The upper part of the subsoil, to a depth of 40 inches, is red clay loam. The lower part of the subsoil, to a depth of 45 inches, is mottled red and brown loam. The underlying material is soft sandstone that extends to a depth of 50 inches or more.

Included with this soil in mapping are a few areas of a soil similar to Nauvoo soil, except that it is more clayey in the lower part of the subsoil. Also included are areas of a soil similar to Nauvoo except it is shallower to hard rock. A few small areas of Townley and Wynnville soils are also included. Included soils make up about 15 percent of this unit.

Water and air move through the soil at a moderate rate, and surface runoff from cultivated areas is medium to rapid. Reaction is strongly acid or very strongly acid throughout, except for surface layers that have been limed. It has moderate available water capacity. The tilth of the soil is good and it can be worked throughout a wide range of moisture content. Generally, root development is not restricted in the upper 40 inches of the soil. However, a plow pan is likely to develop unless depth of plowing is varied.

This soil has fair potential for growing cotton, corn, soybeans, small grain, and grasses and legumes for hay and pasture. If it is used for cultivated crops, the hazard of erosion is moderate to severe. However, soil loss can be reduced by terraces, farming on the contour, minimum tillage, grassed waterways, and winter cover crops. Returning crop residue to the soil helps to maintain good tilth and increase water infiltration. Cropping systems are needed that include the use of perennial sod crops about 2 years out of 4. This soil does not qualify for prime farmland.

Potential is good for loblolly and Virginia pines. There are significant management problems when growing these trees.

This soil has good potential for building site development. Its potential is somewhat reduced by slope but this can be easily overcome by proper design and installation of structures. Depth to rock is a moderate limitation for septic tank absorption fields but this problem can be overcome by increasing the size of the absorption area. Excessive seepage from lagoons can be prevented by special treatment to seal the bottom of the lagoon. Potential for topsoil use is fair because of rock fragments and steep slopes. (Capability subclass IIIe; Woodland suitability group 2o1)

(7) Nauvoo-Townley association, hilly.

This map unit consists of deep and moderately deep well drained, soils on ridgetops and side slopes. These soils formed in loamy and clayey residuum from sandstone and shale. Mapped areas range from about 20 acres to several hundred acres in size. About 44 percent of the unit is Nauvoo soils and 40 percent is Townley soils. Most of this unit is in inaccessible remote areas and it is not practical to separate them in mapping. Slopes range from 10 to 35 percent.

Typically, Nauvoo soils have a brown sandy loam surface layer about 6 inches thick. The subsoil, to a depth of 44 inches is yellowish red clay loam with some sandstone fragments in the lower part. The underlying material extends to a depth of 60 inches or more and is interlayered sandstone and shale.

Typically, Townley soils have a brown silt loam surface layer about 4 inches thick. The subsoil, to a depth of 30 inches, is yellowish red silty clay with few to common fragments of shale. The underlying material is soft shale that extends to a depth of 40 inches or more.

Minor soils make up about 16 percent of the map unit. These include a soil similar to Nauvoo except that it is more clayey in the lower part of the subsoil and often deeper to rock and some areas of Montevallo soils.

Nauvoo soils are moderately permeable, and Townley soils are slowly permeable. Both soils have moderate available water capacity. Nauvoo soils are strongly acid or very strongly acid and Townley soils are strongly acid through extremely acid.

This unit has poor potential for cultivated crops because of steep slopes. The hazard of erosion is severe. The less steeply sloping areas have fair potential for pasture. This soil does not qualify for prime farmland.

Most of this unit is in woodland. Potential is good to fair for loblolly, shortleaf, and Virginia pines. On steeper slopes there is a moderate hazard of erosion and the use of equipment is moderately restricted.

This unit has poor potential for building site development because of slope. Potential for topsoil use is poor because of steep slopes, excessive clay, and thin available soil material. (Capability subclass VIIe; Woodland suitability group, Nauvoo part 2o1, Townley part 4r2)

(10) Palmerdale very shaly loam, 15 to 60 percent slopes.

This deep, somewhat excessively drained soil formed in material from surface strip mining of coal. Most areas have not been smoothed and occur as a series of cone shaped heaps connected by very narrow ridges. Most areas have open pits and a few areas have high walls.

Typically, the surface layer is brown, dark gray, and yellowish brown very shaly loam, about 8 inches thick. The underlying material is yellowish brown and dark grayish brown very shaly loam to a depth of 84 inches, or more.

Included with this soil in mapping are a few small areas of Brilliant, Montevallo, Nauvoo, and Townley soils. Also, included were a few areas with slopes less than 15 percent.

This soil has moderately rapid permeability and very low available water capacity. Reaction is strongly acid through extremely acid.

This soil has poor potential for cultivated crops and pasture because of steep slopes and the amount and size of coarse fragments. Potential is fair for growing loblolly, longleaf, and Virginia pines and American Sycamore. The erosion hazard and seedling mortality are severe because of slope and the very low available water capacity. The use of equipment is severly restricted by slope. When graded and smoothed, this soil has fair potential for selected grasses and legumes. This soil does not qualify for prime farmland.

This soil has poor potential for building site development and septic tank absorption fields because of slope. Potential for topsoil use is poor because of rock fragments, borrow areas being difficult to reclaim, and steep slopes. (Capability subclass VIIs; Woodland suitability group 3x9)

(13) Pruitton-Whitwell association.

This map unit consists of deep, well drained and moderately well drained, moderately rapidly and moderately permeable soils on bottoms and low stream terraces. These soils are subject to occasional flooding on the less sloping Pruitton soils of this unit. Slopes range from 0 to 2 percent. Mapped areas range from about 10 to several hundred acres in size. Both soils have similar use and management and it is not practical to separate them in mapping.

Typically, Pruitton soils have a brown silt loam surface layer about 5 inches thick. The subsoil, to a depth of 42 inches, is dark brown or yellowish brown silt loam. The underlying material, to a depth of 60 inches or more, is mottled yellowish brown, pale brown and gray silt loam.

Typically, Whitwell soils have a brown silt loam surface layer, about 6 inches thick. The subsoil, to a depth of 33 inches, is yellowish brown silt loam with a few gray mottles in the lower part. The lower part of the subsoil, to a depth of 43 inches, is mottled brown and light brownish gray silt loam. The underlying material, to a depth of 60 inches or more, is mottled gray and yellowish brown silt loam.

Minor soils make up about 14 percent of this unit. These include small areas of Mantachie soils, and areas of a soil similar to Pruitton except that it has less sand in the subsoil.

Air and water moves through the Pruitton soils at a moderately rapid rate and through the Whitwell soils at a moderate rate. Both soils have slow surface runoff. Pruitton soils are medium acid through very strongly acid and Whitwell soils are strongly acid or very strongly acid. Surface layers are less acid for both soils where limed. Both soils have high available water capacity. These soils have good tilth and can be worked throughout a wide range of moisture content without clodding and crusting. Generally, root development is not restricted in the upper 40 inches of these soils. However, during periods of high rainfall a water table will affect root development in Whitwell soils below 24 inches.

This unit has good potential for cultivated crops such as cotton, corn, and soybeans. Crops that grow in late winter and early spring have the greatest risk from flood damage in low areas of this unit. Also, these soils have good potential for hay and pasture. If these soils are used for cultivated crops, the hazard of erosion is slight. Row arrangement and surface ditches are needed to remove surface water from some fields. Returning crop residue to the soil helps to maintain good tilth and increase water infiltration. Cultivated crops can be grown each year where good conservation practices are followed. This soil will qualify for prime farmland.

Potential is good for loblolly pine, sweetgum, and yellow-poplar. There are no significant limitations for use and management.

These soils have poor potential for building site development and septic tank absorption fields because of the hazard of flooding on Pruitton soils and a wetness limitation on Whitwell soils. Generally, it is not economically feasible to overcome these limitations. Potential for topsoil use is fair to poor because of rock fragments, borrow areas being difficult to reclaim, and thin available soil material. (Capability subclass IIw; Woodland suitability group Pruitton 2o7; Whitwell 2w8)

(11) Smithdale-Pikeville association, hilly.

This map unit consists of deep well drained, strongly sloping to steep soils on dissected uplands mainly in the western part of Walker County. These soils formed in loamy marine sediments of the Coastal Plain. Pikeville soils have an appreciable content of gravel, mainly in the lower part of the subsoil. Mapped areas range from about 30 to several hundred acres in size. About 65 percent of the unit is Smithdale soils and 25 percent is Pikeville soils. The use and management of the Smithdale and Pikeville soils is similar and it was not practical to separate them in mapping. Slopes range from 10 to 35 percent.

Typically, Smithdale soils have a dark grayish brown sandy loam surface layer, about 4 inches thick. The subsurface layer is yellowish brown sandy loam, about 8 inches thick. The subsoil, to a depth of 33 inches, is yellowish red loam or sandy clay loam. Below this, and to a depth of 84 inches, is red sandy clay loam or sandy loam.

Typically Pikeville soils have a dark grayish brown sandy loam surface layer about 3 inches thick. The subsurface layer, about 7 inches thick, is brown sandy loam. Both the surface and subsurface layers contain some gravel. The upper part of the subsoil, to a depth of 34 inches, is reddish brown or yellowish red loam, with about 10 percent gravel. The lower part of the subsoil, to a depth of 72 inches, is strong brown gravelly loam, with about 35 percent gravel.

Included in mapping and making up about 10 percent of the unit is a soil similar to Pikeville except it has more gravel in the upper part of the subsoil.

Both Smithdale and Pikeville soils are moderately permeable. Smithdale soils have moderate to high available water capacity and Pikeville soils have moderate available water capacity. Both soils are strongly or very strongly acid throughout.

This unit has poor potential for cultivated crops because of steep slopes. If cultivated, the hazard of erosion is severe. The less steeply sloping areas have fair potential for pasture grasses and legumes. This soil does not qualify for prime farmland.

Most of this unit is used as woodland and it has good potnetial for loblolly pine. There are no significant limitations for use and management.

This unit has poor potential for building site development and septic tank absorption fields because of slope. Potential for topsoil use is poor because of steep slopes. (Capability subclass VIIe; Woodland suitability group 3o1 for both Smithdale and Pikeville soils)

(17) Townley silt loam, 2 to 6 percent slopes.

This gently sloping, moderately deep, well drained soil is on ridges and side slopes. Mapped areas range from about 5 to 100 acres or more.

Typically, the surface layer is very dark grayish brown silt loam, about 2 inches thick. The subsurface layer is brown silt loam, about 4 inches thick. The upper part of the subsoil is yellowish red silty clay, and the lower part of the subsoil is strong brown silty clay. The subsoil extends to a depth of 30 inches. The underlying material is shale that extends to a depth of 50 inches or more.

Included with this soil in mapping are a few small areas of Montevallo, Nauvoo, and Wynnville soils. Also, included is a soil similar to the Townley, except that it has less clay in the upper part of subsoil and is deeper to shale. Included soils make up about 15 percent of this unit.

Water and air move through this soil at a slow rate and surface runoff from cultivated areas is medium. Reaction is strongly acid through extremely acid throughout, except for surface layers that have been limed. It has moderate available water capacity The tilth is good, and the soil can be worked throughout a wide range of moisture content without clodding or crusting. Generally, root development is not restricted in the upper 20 to 36 inches of soil. However, a plow pan is likely to develop unless depth of plowing is varied.

This soil has good potential for growing cotton, corn, soybeans, and small grain and grasses and legumes for hay and pasture. If it is used for cultivated crops, the hazard of erosion is moderate. However, soil loss can be reduced by terraces, farming on the contour, minimum tillage, grassed waterways, and winter cover crops. Returning crop residue to the soil helps to maintain good tilth and increase water infiltration. Cultivated crops can be grown each year if good conservation practices are followed. This soil will qualify for prime farmland.

Potential is fair for loblolly and Virginia pines. There are no significant limitations for use and management.

This soil has fair potential for most building site development and poor potential for septic tank absorption fields mainly because of the shallow depth to shale. These limitations can be partially overcome by proper design and installation of structures. Potential for topsoil use is poor because of excessive clay and thin soil material available. (Capability subclass IIe; Woodland suitability group 4o1)

(18) Townley silt loam, 6 to 15 percent slopes.

This sloping to strongly sloping, well drained soil is on ridgetops and side slopes. Mapped areas range from about 5 acres to several hundred acres.

Typically, the surface layer is strong brown silt loam, about 5 inches thick. The subsoil, to a depth of 34 inches, is yellowish red silty clay with the lower part having some yellow and red fragments of shale. The underlying material extends to a depth of 50 inches or more and is thin layers of weathered shale in various shades of brown, red, yellow, and gray.

Included with this soil in mapping are a few areas of Montevallo, Nauvoo, and Wynnville soils. Also, included is a soil similar to Townley, except that it has less clay in the upper part of the subsoil and is deeper to shale. Included soils make up about 15 to 20 percent of this unit.

Water and air move through this soil at a slow rate, and surface runoff from cultivated areas is medium to rapid. Reaction is strongly acid through extremely acid throughout, except for surface layers that have been limed. Tilth is good and the soil can be worked throughout a wide range of moisture content without clodding or crusting. Generally, root development is not restricted in the upper 20 to 36 inches of the soil. However, a plow pan is likely to develop unless depth of plowing is varied.

This soil has fair to poor potential for cultivated crops. It has good potential for hay and pasture. If it is used for cultivated crops, the hazard of erosion is severe. However, soil loss can be reduced by terraces, farming on the contour, minimum tillage, grassed waterways, and winter cover crops. Returning crop residue to the soil helps to maintain good tilth and increases water infiltration. Cropping systems are needed that include the use of perennial sod crops about 2 years in 3. This soil does not qualify for prime farmland.

Potential is good for loblolly and Virginia pines. There are no significant limitations for use and management.

This soil has fair potential for most building site development and poor potential for septic tank absorption fields. Slope and shallow depth to shale are the main limitations. These can be partially overcome by proper design and installation of structures. Potential for topsoil use is poor because of excessive clay and thin soil material available. (Capability subclass IVe; Woodland suitability group 4o1)

(12) Wynnville loam, 2 to 6 percent slopes.

This gently sloping, deep, moderately well drained soil is on broad ridges. Mapped areas range from about 5 to 100 acres or more.

Typically, the surface layer is dark grayish brown loam, about 3 inches thick. The subsurface layer is brown loam, about 5 inches thick. The upper part of the subsoil is yellowish brown loam that extends to a depth of 25 inches. The next layer, to a depth of 38 inches, is yellowish brown compact and brittle loam with tongues and pockets of light brownish gray loam. The lower part of the subsoil is strong brown loam with a few veins of light brownish gray loam to a depth of 72 inches, or more.

Included with this soil in mapping are a few areas of Nauvoo and Townley soils. Included soils make up about 15 percent of the unit.

Water and air move through the upper 25 inches of the soil at a moderate rate but movement is somewhat restricted below 25 inches. Surface runoff from cultivated areas is medium. Reaction is strongly acid through extremely acid throughout, except for surface layers that have been limed. It has moderate available water capacity. Tilth is good and the soil can be worked throughout a wide range of moisture content without clodding or crusting. Root development is restricted by the compact and brittle layer and this layer perches water mostly during winter months. Also, a plow pan is likely to develop if depth of plowing is not varied.

This soil has good potential for growing cotton, corn, soybeans, and small grain and hay and pastures. If the soil is used for cultivated crops the hazard of erosion is moderate. However, soil loss can be reduced by terraces, farming on the contour, minimum tillage, grassed waterways, and winter cover crops. Returning crop residue to the soil helps to maintain good tilth and increase water infiltration. Cultivated crops can be grown each year if good conservation practices are followed. This soil will qualify for prime farmland.

Potential is good for loblolly pine and yellow-poplar. There are no significant limitations for use and management.

This soil has fair potential for building site development because of seasonal wetness. This can be partially overcome with properly designed and installed drainage systems. The use of septic tank absorption fields is restricted by seasonal wetness and the moderately slow permeability of the compact and brittle layers. It is very difficult to overcome these problems. Potential for topsoil use is good. (Capability subclass IIe; Woodland suitability group 3o7)

STATUS OF SOIL SERIES

All soil series in the survey area are established series. Some of these series have been correlated in adjoining areas. The other series have been correlated in other areas having similar soils according to criteria set forth in Soil Taxonomy. There is no anticipated major change in these established soils where they occur in the remainder of these two counties to be correlated. Refer to table "Classification of the Soils."

SOIL SERIES

AND

MORPHOLOGY

Soil Series and Morphology

In this section each soil series recognized in the survey area is described in detail. The descriptions are arranged in alphabetic order by series name.

Characteristics of the soil and the material in which it formed are discussed for each series. The soil is then compared to similar soils and to nearby soils of other series. Then a pedon, a small three-dimensional area of soil that is typical of the soil series in the survey area, is described. The detailed descriptions of each soil horizon follow standards in the Soil Survey Manual. (2) Unless otherwise noted, colors described are for moist soil.

Following the pedon description is the range of important characteristics of the soil series in this survey area. Phases, or mapping units, or each soil series are described in the section "Soil maps for detailed planning."

Allen Series

The Allen series consists of deep, well drained, moderately permeable soils on footslopes of mountains. They formed in material weathered chiefly from sandstone. Slopes range from 6 to 10 percent.

Allen soils are adjacent to Hector, Montevallo, Pruitton, and Whitwell soils in the landscape. The Hector and Montevallo soils have thinner sola and are on steeper slopes above the Allen soils. Pruitton and Whitwell soils are on low terraces subject to periodic flooding. In addition, Pruitton soil do not have argillic horizons and Whitwell soils are not as well drained as the Allen soils.

Typical pedon of Allen sandy loam, 6 to 10 percent slopes, 0.5 mile north of U.S. Highway 78 at Warrior River bridge in the NE¼ NW¼ section 23, T14S, R6W:

A1-0 to 2 inches; grayish brown (10YR 5/2) sandy loam; weak medium granular structure; friable; common fine roots; strongly acid; clear smooth boundary.

A2-2 to 9 inches; yellowish brown (10YR 5/4) sandy loam; weak medium granular structure; friable; common fine roots; strongly acid; abrupt smooth boundary.

B1-9 to 17 inches; yellowish red (5YR 5/6) loam; weak medium subangular blocky structure; friable; few fine roots; patchy clay films; strongly acid; clear smooth boundary.

B21t-17 to 32 inches; red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; few fine roots; patchy clay films; strongly acid; clear smooth boundary.

B22t-32 to 68 inches; red (2.5YR 4/6) clay loam, with common medium distinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; continuous clay films on faces of some peds; very strongly acid; gradual smooth boundary.

B23t-68 to 84 inches; red (2.5YR 4/6) sandy clay loam; with few fine distrinct strong brown (7.5YR 5/6) mottles; moderate medium subangular blocky structure; friable; very strongly acid.

The thickness of the solum ranges from 60 to 80 or more inches. Depth of rock is greater than 72 inches. Reaction is strongly acid or very strongly throughout, except for surface layers that have been limed.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma 3 through 8. Texture is sandy loam.

The B1 horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 through 8. Texture is sandy loam, loam or sandy clay loam.

The Bt horizons have hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 6 or 8. In most pedons the lower horizons are mottled in shades of red, yellow, brown, and in places gray. Texture is sandy clay loam or clay loam.

Brilliant Series

The Brilliant series consists of deep, somewhat excessively drained, moderately rapidly permeable soils that formed in material from the surface strip mining of coal. Slopes range from 15 to 60 percent.

Brilliant soils are adjacent to Montevallo, Nauvoo, Palmerdale, Townley, and Wynnville soils. Palmerdale soils are more acid than the Brilliant soils. All the other adjacent soils have better developed profiles and less coarse fragments on their surfaces.

Typical pedon of Brilliant very shaly loam, 15 to 60 percent slopes, 2.5 miles southeast of Curry, in the NE¼ SE¼ section 7, T13S, R6W:

Ap-0 to 7 inches; very dark gray (5Y 3/1) very shaly loam; massive; friable; about 75 percent coarse fragments, mainly shale with some sandstone, fragments range from 1/8 inch to 60 inches across; neutral; gradual wavy boundary.

C-7 to 84 inches; dark gray (5Y 4/1) very shaly loam; massive; friable; about 80 percent coarse fragments, mainly shale with some sandstone, fragments range from 1/8 to 60 inches across; neutral.

The thickness of the spoil material is more than 60 inches. Reaction ranges from medium acid to moderately alkaline throughout. The amount of coarse fragments range from 50 to 90 percent in the Ap and C horizons. Sandstone, siltstone, and shale fragments range from about 1/8 to 60 inches across.

The Ap horizon has hue of 5Y, value of 3 or 4, and chroma of 1 or 2. The fine earth fraction is mainly loam.

The C horizon has hue of 5Y, value of 3 or 4, and chroma of 1 or 2. The fine earth fraction is mainly loam.

Hector Series

The Hector series consists of shallow, well drained moderately rapidly permeable soils on steep mountain sides. They formed in residuum weathered from sandstone. Slopes range from 15 to 45 percent.

Hector soils are adjacent to Nauvoo and Allen soils. Both Nauvoo and Allen soils have thicker sola. Generally, Nauvoo soils are above the Hector soils and Allen soils are below Hector soils in the landscape.

Typical pedon of Hector sandy loam in an area of Hector-Rock outcrop complex, 15 to 45 percent slopes, 0.3 mile northeast of Walston Bridge, and 165 feet east of Walston Bridge Road in the NE¼ NW¼ section 24, T13S, R7W:

A1-0 to 5 inches; brown (10YR 5/3) sandy loam; weak medium granular structure; very friable; common fine roots, few fragments of sandstone; strongly acid; abrupt smooth boundary.

B21-5 to 12 inches; yellowish brown (10YR 5/4) sandy loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid; clear smooth boundary.

B22-12 to 18 inches; yellowish brown (10YR 5/6) sandy loam; weak medium subangular blocky structure; friable; few fine roots; very strongly acid.

R-18 inches; hard sandstone bedrock.

Thickness of the solum and depth to bedrock ranges from 10 to 20 inches. Reaction of the A1 horizon ranges from slightly acid to strongly acid and the B horizon is strongly or very strongly acid.

The A horizon has hue of 10YR, value of 3 through 5, and chroma of 2 through 4. Texture is sandy loam.

The B horizon has hue of 10YR through 5YR, value of 4 or 5, and chroma of 4 through 6. Texture is sandy loam or loam.

Mantachie Series

The Mantachie series consists of deep, somewhat poorly drained, moderately permeable soils on flood plains. They formed in loamy alluvial deposits along streams. Slopes range from 0 to 3 percent.

Mantachie soils are adjacent to Montevallo, Ochlockonee, Pruitton, Townley, and Whitwell soils in the landscape. All of the adjacent soils are better drained than the Mantachie soils. Pruitton and Whitwell soils are on low terraces, and the Montevallo and Townley soils are on gently sloping to very steep uplands. In addition to being better drained, the Ochlockonee soils have less than 18 percent clay in the control section.

Typical pedon of Mantachie silt loam, 6.6 miles northwest of intersection of Highways AL-5 and AL-195, and approximately 200 feet southwest of AL-5 in the SE¼ SE¼ section 16, T13S, R8W:

A1-0 to 5 inches; grayish brown (10YR 5/2) silt loam; weak medium granular structure; friable; many fine roots; few black and brown concretions; strongly acid; abrupt smooth boundary.

B21-5 to 11 inches; mottled yellowish brown (10YR 5/6) and grayish brown (10YR 5/2) silt loam; weak medium subangular blocky structure; friable; common fine roots, few fine black and brown concretions; very strongly acid; gradual wavy boundary.

B22-11 to 18 inches; mottled yellowish brown (10YR 5/6) and light brownish gray (10YR 6/2) silt loam; weak medium subangular blocky structure; friable; few fine roots; common medium black and brown concretions; very strongly acid; gradual wavy boundary.

B23g-18 to 36 inches; light brownish gray (10YR 6/2) loam; with many medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; few fine roots, common medium black and brown concretions; very strongly acid; gradual wavy boundary.

B24g-36 to 60 inches; light brownish gray (10YR 6/2) loam, with many medium distinct yellowish brown (10YR 5/6) mottles; weak medium subangular blocky structure; friable; common medium black and brown concretions; very strongly acid.

The thickness of the solum ranges from 30 to 65 inches. Reaction is strongly acid or very strongly acid throughout except for surface layers that have been limed. The soil has few to common concretions throughout the solum.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 1 through 6. Texture is silt loam.

The upper part of the B horizon has hue of 10YR or 2.5 Y, value of 4 or 5, and chroma of 2 through 6. If chroma is 3 through 6, it has few to many grayish mottles. The lower part of the B horizon has hue of 10YR to 2.5Y, value of 4 through 6, and chroma of 1 or 2. It has few to many mottles of brown or red. Texture is loam, clay loam, sandy loam, sandy clay loam, or silt loam.

Montevallo Series

The Montevallo series consists of shallow, well drained, moderately permeable shaly soils. They are dominantly on mountainsides. They formed in residuum weathered from silty shale that contains a few strata of sandstone. Slopes range from 15 to 45 percent.

Montevallo soils are adjacent to Brilliant, Nauvoo, Palmerdale, Pikeville, Smithdale, and Townley soils in the landscape. Nauvoo, Pikeville, and Smithdale soils are more sandy throughout and Townley soils are more clayey. Brilliant and Palmerdale soils are forming in material from strip mining.

Typical pedon of Montevallo shaly silt loam in an area of Montevallo-Townley association, steep, in a cut at Westend City Park in Jasper, in the NE¼ SW¼ section 8, T14S, R10W:

A1-0 to 4 inches; dark grayish brown (10YR 4/2) shaly silt loam; weak medium granular structure; friable; many fine roots, about 30 percent by volume of fragments of shale; very strongly acid; abrupt smooth boundary.

B-4 to 15 inches; brown (10YR 5/3) very shaly silt loam; weak medium subangular blocky structure; friable; few fine roots, about 70 percent by volume of fragments of shale; very strongly acid; gradual irregular boundary.

Cr-15 to 27 inches; shale, gray (10YR 5/1) exterior and yellowish brown (10YR 5/6) interior; very firm.

The thickness of the solum ranges from 10 to 20 inches. Reaction ranges from medium acid through very strongly acid throughout.

The A horizon has hue of 7.5YR or 10YR, value of 3 or 4, and chroma of 2 through 4. Where the value is less than 4 the A horizon is less than 6 inches thick. Texture of the A horizon is shaly silt loam and contains from 15 to 40 percent by volume of fragments of shale.

The B horizon has hue of 7.5YR or 10YR, value of 3 through 6, and chroma of 3 through 6. It is shaly silt loam, shaly loam, or their very shaly counterparts. The volume of fragments of shale ranges from 35 to 90 percent.

The Cr horizon is layered shale having different degrees of fracturing. It has variegated colors in shades of gray, brown, red, and yellow.

Nauvoo Series

The Nauvoo series consists of deep, well drained, moderately permeable soils on ridgetops and sideslopes. They formed in residuum weathered from sandstone and shale. Slopes range from 2 to 10 percent.

Nauvoo soils are commonly adjacent to Hector, Montevallo, Townley, and Wynnville soils in the landscape. Hector and Montevallo soils have thinner sola, do not have argillic horizons, and typically have steeper slopes. Townley soils have more clay in the B horizon. Wynnville soils have a fragipan.

Typical pedon of Nauvoo sandy loam, 6 to 10 percent slopes, 2 miles east of Curry in the NE¼ SE¼ section 32, T12S, R6W:

A1-0 to 3 inches; dark grayish brown (10YR 4/2) sandy loam; weak medium granular structure; friable; many fine roots, few small sandstone fragments; strongly acid; clear smooth boundary.

A2-3 to 8 inches; brown (10YR 5/3) sandy loam; weak medium granular structure; friable; many fine roots; few small sandstone fragments; strongly acid; abrupt smooth boundary.

B21t-8 to 22 inches; yellowish red (5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; common fine roots; few small sandstone fragments; clay films on faces of most peds; very strongly acid; gradual smooth boundary.

B22t-22 to 40 inches; red (2.5YR 4/6) clay loam; moderate medium subangular blocky structure; friable; few fine roots; few small sandstone fragments; clay films on faces of some peds; very strongly acid; clear smooth boundary.

B3-40 to 45 inches; mottled red (2.5YR 5/6) and strong brown (7.5YR 5/6) loam; weak medium subangular blocky structure; friable; patchy clay films on faces of some peds; about 15 percent coarse sandstone fragments less than 1 inch in diameter; very strongly acid; clear wavy boundary.

Cr-45 to 50 inches; red and strong brown; weathered sandstone bedrock; level bedded, massive.

Thickness of the solum is 30 to 50 inches, and the depth to weathered bedrock is 40 to 60 inches. Reaction is strongly acid or very strongly acid throughout, except for surface layers that have been limed.

The A horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 through 6. Some pedons have A1 horizons less than 6 inches thick with value of 3, and chroma of 2 or 3. Texture is sandy loam. Coarse fragments range from 0 to 5 percent.

The B1 horizon, where present, has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 through 8. Texture is sandy loam, loam, or sandy clay loam. Coarse fragments range from 0 to 8 percent by volume.

B2t horizon has hue of 5YR or 2.5YR, value of 4 or 5, and chroma of 4 through 8. Texture is loam, sandy clay loam, or clay loam. Coarse fragments range from 0 to 8 percent by volume.

The B3 horizon has about the same color range as the B1 except it is mottled in shades or red, brown, or yellow in some pedons. Texture is sandy loam, loam, or sandy clay loam. Coarse fragments range from 0 to 15 percent by volume.

The Cr horizon consists of level bedded, weathered sandstone, or interbedded sandstone and shale in shades of red, yellow, or gray. Although the degree of weathering varies from pedon to pedon, generally this horizon can be ripped with heavy machinery.

Palmerdale Series

The Palmerdale series consists of deep, somewhat excessively drained, moderately rapidly permeable soils that formed in material from the surface strip mining of coal. Slopes range from 15 to 60 percent.

Palmerdale soils are adjacent to Brilliant, Montevallo, Nauvoo, Townley, and Wynnville soils. Brilliant soils are less acid than Palmerdale soils. All the other adjacent soils have better developed profiles and less coarse fragments on their surface.

Typical pedon of Palmerdale very shaly loam, 15 to 60 percent slopes, 3 miles northwest of Manchester, in the NW¼ NW¼ section 6, T13S, R7W:

Ap-0 to 8 inches; brown (10YR 5/3), dark gray (N 4/0), yellowish brown (10YR5/4) very shaly loam; weak medium granular structure; friable; few fine roots, approximately 70 percent randomly oriented coarse fragments, mostly platy shale; very strongly acid; gradual wavy boundary.

C-8 to 84 inches; yellowish brown (10YR 5/4, 5/6), dark grayish brown (2.5YR 4/2) very shaly loam; weak medium granular structure; friable; approximately 80 percent randomly oriented coarse fragments, mostly platy shale; very strongly acid.

The thickness of the mine spoil is more than 60 inches. Reaction ranges from strongly acid through extremely acid. Coarse fragment content ranges from about 60 to 80 percent by volume and range from about 1/8 to 60 inches across.

The A horizon has hue of 2.5Y, 10YR, or 7.5YR, value of 4 or 5, and chroma of 1 through 6. Some colors are neutral. Texture of the fine earth fraction is mostly loam.

The C horizon has hue of 2.5Y, 10YR, and 7.5YR, value of 4 or 6, and chroma of 2 through 6. The fine earth fraction is loam or silt loam.

Pikeville Series

The Pikeville series consists of deep, well drained, moderately permeable soils on upland ridges and side slopes. They formed in marine sediments of the Coastal Plain. Slopes range from 10 to 35 percent.

Pikeville soils commonly are adjacent to Montevallo, Smithdale, and Townley soils in the landscape. Montevallo soils have thinner sola and a high content of shale fragments throughout. Smithdale soils have less gravel, especially in the lower part of the subsoil. Townley soils have a thinner sola, and are more clayey in the subsoil. Montevallo and Townley soils are below Pikeville soils in the landscape.

Typical pedon of Pikeville sandy loam in an area of Smithdale-Pikeville association, hilly, 2.3 miles south of the railroad underpass at Eldridge in the NE¼ SW¼ section 29, T13S, R10W:

A1-0 to 3 inches; dark grayish brown (10YR 4/2) sandy loam; weak medium granular structure; friable; common fine roots; about 10 percent gravel by volume; very strongly acid; clear smooth boundary.

A2-3 to 10 inches; brown (10YR 5/3) sandy loam; weak medium granular structure; friable; few fine roots; about 10 percent gravel by volume; very strongly acid; abrupt smooth boundary.

B21t-10 to 14 inches; reddish brown (5YR 4/4) loam; weak medium subangular blocky structure; friable; few fine roots; few patchy clay films; about 10 percent gravel by volume; very strongly acid; clear smooth boundary.

B22t-14 to 34 inches; yellowish red (5YR 5/6) loam; moderate medium subangular blocky structure; friable; few fine roots; few thin clay films on faces of peds; about 10 percent gravel by volume; very strongly acid; gradual wavy boundary.

B23t-34 to 72 inches; strong brown (7.5YR 5/6) gravelly loam; weak medium subangular blocky structure; friable; few patchy clay films on gravel; sand grains coated and bridged with clay; about 35 percent gravel by volume; very strongly acid.

Thickness of the solum is 72 inches, or more. Depth to horizons containing more than 25 percent gravel ranges from 30 to 48 inches. Reaction is strongly acid or very strongly acid throughout, except for surface layers that have been limed.

The A horizon has hue of 10YR, value of 4 through 6, and chroma of 2 through 4. Texture is sandy loam.

The B horizon, where present, has hue of 5YR through 10YR, value of 3 or 4, and chroma of 4 through 8. Texture is sandy loam or loam.

The B21t and B22t horizons have hue of 2.5YR through 7.5YR, value of 4 or 5, and chroma of 6 or 8. Texture is loam or sandy clay loam.

The B23t horizon has hue of 2.5YR through 10YR, value of 4 or 5, and chroma of 4 through 8. Texture is gravelly sandy loam, gravelly loam, gravelly sandy clay loam, or their very gravelly counterparts.

The A horizon has hue of 10YR, value of 4 through 6, and chroma of 2 through 4. Texture is sandy loam.

The B horizon, where present, has hue of 5YR through 10YR, value of 3 or 4, and chroma of 4 through 8. Texture is sandy loam or loam.

The B21t and B22t horizons have hue of 2.5YR through 7.5YR, value of 4 or 5, and chroma of 6 or 8. Texture is loam or sandy clay loam.

The B23t horizon has hue of 2.5YR through 10YR, value of 4 or 5, and chroma of 4 through 8. Texture is gravelly sandy loam, gravelly loam, gravelly sandy clay loam, or their very gravelly counterparts.

Pruitton Series

The Pruitton series consists of deep, well drained, moderately rapidly permeable soils on bottomlands and along drainageways. They formed in loamy alluvium.

Pruitton soils are commonly adjacent to Allen, Mantachie, Montevallo, Townley, and Whitwell soils. Allen, Montevallo, and Townley soils are on uplands. Mantachie and Whitwell soils are not as well drained.

Typical pedon of Pruitton silt loam, in an area of Pruitton-Whitwell association, about 5 miles southwest of Carbon Hill and 0.25 mile northeast of the Fayette County line, in the SE¼ SW¼, section 33, T13S, R10W:

Ap-0 to 5 inches; brown (10YR 5/3) silt loam; weak medium granular structure; friable; common fine roots; strongly acid; abrupt smooth boundary.

B2-5 to 28 inches; dark brown (7.5YR 4/4) silt loam; weak medium subangular blocky structure; friable; few fine roots; few black concretions in lower part; very strongly acid; gradual smooth boundary.

B3-28 to 42 inches; yellowish brown (10YR 5/4) silt loam; weak medium subangular blocky structure; friable; few small gravel; common black and brown concretions; very strongly acid; gradual smooth boundary.

C-42 to 60 inches; mottled yellowish brown (10YR 5/4), pale brown (10YR 6/3) and light brownish gray (10YR 6/2) silt loam; massive; friable; few small gravel, common black and brown concretions; very strongly acid.

The thickness of the solum is 25 to 50 inches. Reaction is very strongly acid through medium acid. Depth to rock is 60 inches or more.

The A horizon has hue of 10YR, value of 4 or 5, and chroma of 2 through 4. It is silt loam.

The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 through 6. It is silt loam or loam.

The C horizon has hue of 10YR, value of 3 through 5, and chroma of 3 through 6, and commonly is mottled in shades of brown, gray, and yellow. It is silt loam, loam, or sandy loam or their gravelly counterparts. The content of gravel range from none to about 50 percent by volume.

Smithdale Series

The Smithdale series consists of deep, well drained, moderately permeable soils on upland ridges and side slopes. They formed in marine sediments of the Coastal Plain. Slopes range from 10 to 35 percent.

Smithdale soils commonly are adjacent to Montevallo, Pikeville, and Townley soils in the landscape. Montevallo soils have a thinner sola, and a high content of shale fragments throughout. Pikeville soils have an appreciable content of gravel in the subsoil and especially in the lower part. Townley soils have thinner sola, and more clay in the subsoil. Montevallo and Townley soils are below Smithdale soils in the landscape.

Typical pedon of Smithdale sandy loam, in an area of Smithdale-Pikeville association, hilly, 1.8 miles south of the railroad underpass at Eldridge in the NE¼ NW¼ section 29, T13S, R10W:

A1-0 to 4 inches; dark grayish brown (10YR 4/2) sandy loam; weak medium granular structure; very friable; common fine roots; few gravel; strongly acid; clear smooth boundary.

A2-4 to 12 inches; yellowish brown (10YR 5/4) sandy loam; weak medium granular structure; very friable; common fine roots; few gravel; strongly acid; abrupt smooth boundary.

B1-12 to 17 inches; dark brown (7.5YR 4/4) loam; weak medium subangular blocky structure; friable; common fine roots, few quartz pebbles; very strongly acid; clear smooth boundary.

B21t-17 to 33 inches; yellowish red (5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few quartz pebbles; common thin clay films on peds; very strongly acid; gradual smooth boundary.

B22t-33 to 50 inches; red (2.5YR 4/6) sandy clay loam; moderate medium subangular blocky structure; friable; few fine roots; few quartz pebbles; patchy clay films on some peds, sand grains coated and bridged with clay; very strongly acid; gradual smooth boundary.

B23t-50 to 84 inches; red (2.5YR 4/6) sandy loam; weak medium subangular blocky structure; friable; sand grains coated and bridged with clay, few patchy clay films; few pockets of uncoated sand grains; very strongly acid.

Thickness of the solum ranges from 60 to 100 inches, or more. Reaction is strongly acid or very strongly acid throughout, except for surface layers that have been limed.

The A horizon has hue of 10YR or 7.5YR, value of 4 through 6, and chroma of 2 through 6. Texture is sandy loam.

Where present, the B1 horizon has hue of 7.5YR or 5YR, value of 4 or 5, and chroma of 4 through 8. Texture is loam or sandy clay loam. The B2t horizon has hue of 5YR, 2.5YR, or 10R, value of 4 or 5, and chroma of 6 or 8. The lower part of the B2t horizon has few to many pockets of uncoated sand grains. The upper part of the B2t horizon is sandy loam, loam, or sandy clay loam. Content of gravel ranges from none to about 10 percent by volume throughout.

Townley Series

The Townley series consists of moderately deep, well drained, slowly permeable soils on upland ridgetops and side slopes. They formed in clayey residuum weathered from shale or interbedded sandstone and shale. Slopes range from 2 to 45 percent.

Townley soils are adjacent to Hector, Montevallo, Nauvoo, and Wynnville soils. All of the adjacent soils have less clay in their subsoil than Townley soils. In addition, Hector and Montevallo soils have thinner sola and Nauvoo and Wynnville soils have thicker sola.

Typical pedon of Townley silt loam, 2 to 6 percent slopes, 1.75 miles south on AL-13 from the Winston County line and 0.75 mile southeast on Walker County Road 63, in the NE¼ SE¼, section 28, T12S, R10W:

A1-0 to 2 inches; very dark grayish brown (10YR 3/2) silt loam; weak medium granular structure; friable; common fine roots; very strongly acid; clear smooth boundary.

A2-2 to 6 inches; brown (10YR 5/3) silt loam; weak medium granular structure; friable; common fine roots; very strongly acid; abrupt smooth boundary.

B21t-6 to 19 inches; yellowish red (5YR 4/6) silty clay; moderate medium subangular blocky structure; firm; few medium and fine roots; continuous clay films on faces of most peds; very strongly acid; clear smooth boundary.

B22t-19 to 30 inches; strong brown (7.5YR 5/6) silty clay; moderate medium subangular blocky structure; firm; common ½ to 3 inch red (2.5YR 4/6) and light brownish gray (10YR 6/2) fragments of shale; continuous clay films on faces of most peds and some fragments; very strongly acid; clear wavy boundary.

Cr3-30 to 50 inches; level bedded light brownigh gray (10YR 6/2) and strong brown (7.5YR 5/6) consolidated shale; very firm; very strongly acid.

Thickness of the solum is 20 to 36 inches and depth to consolidated shale ranges from 25 to 40 inches. The upper part of the solum has none to common fragments of shale. The lower part of the solum has common to many fragments of shale. Reaction ranges from strongly acid through extremely acid except for surface layers that have been limed.

The A1 horizon has hue of 10YR, value of 3 or 4, and chroma of 2 or 3. The texture is silt loam.

The Bt horizon has hue of 7.5YR, 5YR, or 2.5YR, value of 4 through 6, and chroma of 3 through 6. Texture is silty clay loam, silty clay, or clay.

The Cr horizon is consolidated shale that has variegated colors in shades of gray, brown, yellow, and red. It can be ripped with heavy machinery.

Whitwell Series

The Whitwell series consists of deep, moderately well drained soils on low stream terraces. They formed in loamy alluvium.

Whitwell soils are commonly adjacent to Allen, Mantachie, Montevallo, Pruitton, and Townley soils. The Allen, Montevallo, and Townley soils are on steeper uplands above Whitwell soils. Mantachie soils are not as well drained and Pruitton soils are better drained.

Typical pedon of Whitwell silt loam in an area of Pruitton-Whitwell association, about 5 miles southwest of Carbon Hill and 0.25 mile northeast of the Fayette County line, in the SE¼ SE¼ section 33, T13S, R10W:

Ap-0 to 6 inches; brown (10YR 5/3) silt loam; weak medium granular structure; friable; common fine roots; strongly acid; abrupt smooth boundary.

B21t-6 to 21 inches; yellowish brown (10YR 5/6) silt loam; weak medium subangular blocky structure; friable; few patchy clay films; few brown concretions; few fine roots; very strongly acid; gradual smooth boundary.

B22t-21 to 33 inches; yellowish brown (10YR 5/4) silt loam, with few fine faint light brownish gray (10YR 6/2) mottles; weak medium subangular blocky structure; friable; few patchy clay films; few brown concretions; very strongly acid; gradual smooth boundary.

B3-33 to 43 inches; mottled yellowish brown (10YR 5/4) and light brownish gray (10YR 6/2) silt loam; weak medium subangular blocky structure; friable; common black and brown concretions; very strongly acid; gradual smooth boundary.

C-43 to 60 inches; mottled gray (10YR 6/1) and yellowish brown (10YR 5/6) silt loam; massive; friable; many black and brown concretions; very strongly acid.

The thickness of the solum is 30 to 60 inches. The soil is strongly or very strongly acid, except for surface layers that have been limed.

The A horizon is in hue of 10YR, value of 4 or 5, and chroma of 2 through 4. It is silt loam.

The B horizon has hue of 10YR or 7.5YR, value of 4 or 5, and chroma of 3 through 6. It has mottles having chroma of 2 or less in the upper 20 inches. The B3 horizon is often mottled in shades of brown, gray, and yellow. Texture of the B horizon is silt loam, loam, silty clay loam, or clay loam.

The C horizon is mottled in shades of brown, gray, and yellow. It is silt loam, loam, sandy loam, or clay loam.

Wynnville Series

The Wynnville series consists of deep, moderately well drained soils that have fragipan. They formed in residuum from sandstone and shale. These soils are moderately permeable above the fragipan and moderately slowly permeable in and below the fragipan. They are on broad upland plateaus. Slopes range from 2 to 6 percent.

Typical pedon of Wynnville loam, 2 to 6 percent slopes, 0.35 mile northeast of the intersection of Airport Road and AL-257 on the southeast bank of AL-257, in the NE¼ NW¼ section 22, T13S, R7W:

A1-0 to 3 inches; dark grayish brown (10YR 4/2) loam; weak medium granular structure; friable; common fine roots; few sandstone fragments; strongly acid; clear smooth boundary.

A2-3 to 8 inches; brown (10YR 5/3) loam; weak medium granular structure; friable; common fine roots; few sandstone fragments; strongly acid; abrupt smooth boundary.

B2-8 to 25 inches; yellowish brown (10YR 5/4) loam; weak medium subangular blocky structure; friable; few fine roots; few sandstone fragments; very strongly acid; clear irregular boundary.

Bx1 & A'2-25 to 30 inches; yellowish brown (10YR 5/6) loam (Bx1 part); tongues and pockets of light brownish gray (10YR 6/2) loam (A'2 part); moderate medium subangular blocky structure; yellowish brown part is compact and brittle and makes up about 70 percent of the mass; common vesicular pores; light grayish brown part is friable; continuous clay films on some peds; few sandstone fragments; very strongly acid; gradual irregular boundary.

B'x2-30 to 38 inches; yellowish brown (10YR 5/6) loam, with a few veins and pockets of light brownish gray (10YR 6/2); moderate medium subangular blocky structure; firm; compact and brittle in about 80 percent of the mass; continuous clay films on some peds; few sandstone fragments; very strongly acid; gradual irregular boundary.

B'2t-38 to 72 inches; strong brown (7.5YR 5/8) loam, with few veins of light brownish gray (10YR 6/2); moderate medium subangular blocky structure; firm; continuous clay films on some peds; few sandstone fragments; very strongly acid.

Thickness of the solum is 40 to 72 inches. Depth to bedrock is 48 to 84 inches and depth to the fragipan is 18 to 36 inches. Coarse fragments range from none to common throughout. Reaction is strongly through extremely acid, except for surface layers that have been limed.

The A horizon has hue of 2.5Y or 10YR, value of 4 through 6, and chroma of 2 through 8. Texture is loam.

The B2 horizon has hue of 2.5Y, 10YR, or 7.5YR, value of 5, chroma of 4 through 8. It is loam, silt loam, or sandy clay loam.

The A'2 part of the Bx1 & A'2 horizon has hue of 2.5Y or 10YR, value of 6 or 7, and chroma of 1 through 3. It is sandy loam, silt loam, or loam. The Bx1 part of this horizon has hue of 10YR or 7.5YR, value of 4, and chroma of 4 through 8. It is loam, silt loam, or sandy clay loam.

The B'x2 horizon has hue of 10YR or 7.5YR, value of 5, and chroma of 4 through 8, and often has mottles in shades of red, brown, yellow, and gray. It is loam, sandy clay loam, silt loam, or clay loam.

The B'2t horizon has hue of 2.5YR or 5YR, value of 4 or 5, and chroma of 6 or 8, or hue of 7.5YR, value of 5, and chroma of 6 or 8, it often is mottled in shades of red, brown, yellow, and gray. It is loam, sandy clay loam, or clay loam.

Classification of the Soils

The system of soil classification currently used was adopted by the National Cooperative Soil Survey in 1965. Readers interested in further details about the system should refer to "Soil taxonomy". (3)

The system of classification has six categories. Beginning with the broadest, these categories are the order, suborder, great group, subgroup, family, and series. In this system the classification is based on the different soil properties that can be observed in the field or those that can be inferred either from other properties that are observable in the field or from the combined data of soil science and other disciplines. The properties selected for the higher categories are the result of soil genesis or of factors that affect soil genesis. In table Q, the soils of the survey area are classified according to the system. Categories of the system are discussed in the following paragraphs.

ORDER. Ten soil orders are recognized as classes in the system. The properties used to differentiate among orders are those that reflect the kind and degree of dominant soil-forming processes that have taken place. Each order is identified by a word ending in sol. An example is Entisol.

SUBORDER. Each order is divided into suborders based primarily on properties that influence soil genesis and are important to plant growth or that are selected to reflect the most important variables within the orders. The last syllable in the name of a suborder indicates the order. An example is Aquent (Aqu meaning water, plus ent from Entisol).

GREAT GROUP. Each suborder is divided into great groups on the basis of close similarities in kind, arrangement, and degree of expression of pedogenic horizons; soil moisture and temperature regimes; and base status. Each great group is identified by the name of a suborder and a prefix that suggests something about the properties of the soil. An example is Haplaquents (Hapl meaning simple horizons, plus aquent, the suborder of Entisols that have an aquic moisture regime).

SUBGROUP. Each great group may be divided into three subgroups: the central (typic) concept of the great groups, which is not necessarily the most extensive subgroup; the intergrades, or transitional forms to other orders, suborders, or great groups; and the extragrades, which have some properties that are representative of the great groups but do not indicate transitions to any other known kind of soil. Each subgroup is identified by one or more adjectives preceeding the name of the great group. The adjective Typic identifies the subgroup that is thought to typify the great group. An example is Typic Haplaquents.

FAMILY. Families are established within a subgroup on the basis of similar physical and chemical properties that affect management. Among the properties considered in horizons of major biological activity below plow depth are particle-size distribution, mineral content, temperature regime, thickness of the soil penetrable by roots, consistence, moisture equivalent, soil slope, and permanent cracks. A family name consists of the name of a subgroup and a series of adjectives. The adjectives are the class names for the soil properties used as family differentiae. An example is fine-loamy, mixed, nonacid, mesic, Typic Haplaquents.

SERIES. The series consists of soils that formed in a particular kind of material and have horizons that, except for texture of the surface soil or of the underlying substratum, are similar in differentiating characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineral and chemical composition.

GENETIC KEY TO SOIL SERIES

Soil Series	Depth to Rock (In.)	SUBSOIL Kind	Color	Texture	Landscape Position	Mositure Regime	Parent Material	Special Features
Allen	60	argillic	red	fine-loamy	toe slopes	udic	sandstone	---
Brilliant	60	no subsoil	underlying material is gray	loamy-skeletal control section	side slopes	udic	alkaline mine spoil	60-90% fragments
Hector	10-20	cambic	brown	loamy	ridge and upper side slope	udic	sandstone	---
Mantachie	60	no subsoil	underlying material is gray and brown	fine-loamy	flood plain	aquic	alluvium	---
Montevallo	10-20	cambic	brown and yellow	loamy-skeletal	ridge and side slope	udic	shale	35-90% fragments
Nauvoo	40-60	argillic	red	fine-loamy	ridge, upper side slope, and bench	udic	sandstone and shale	rippable underlying material
Palmerdale	60	no subsoil	underlying material is brown or olive	loamy-skeletal control section	side slopes	udic	acid mine spoil	60-90% fragments
Pikeville	60	argillic	red	fine-loamy	ridge and side slope	udic	marine sediments	---
Pruitton	60	cambic	brown	fine-loamy	flood plain	udic	alluvium	---
Smithdale	60	argillic	red	fine-loamy	ridge and side slope	udic	marine sediment	---
Townley	25-40	argillic	red or brown	clayey	ridge and side slope	udic	shale and sandstone	---
Whitwell	60	argillic	brown	fine-loamy	stream terrace	udic	alluvium	---
Wynnville	48-84	cambic over argillic	red and brown	fine-loamy	plateau	udic	sandstone and shale	fragipan in subsoil

Remarks: All series have a thermic temperature regime and an ochric epiedon.

PRIME FARMLAND UNITS

Map units that qualify for potential prime farmland as defined in CEQ memorandum for Heads of Agencies, dated August 30, 1976; also, Federal Register, volume 42, no. 163, part 657.5 dated August 23, 1977.

5 - Nauvoo sandy loam, 2 to 6 percent slopes
13 - Pruitton-Whitwell association
17 - Townley silt loam, 2 to 6 percent slopes
12 - Wynnville loam, 2 to 6 percent slopes

TABLE A.--ACREAGE AND PROPORTIONATE EXTENT OF THE SOILS

Map symbol	Soil name	Acres	Percent
2	Allen sandy loam, 6 to 10 percent slopes	200	0.3
20	Brilliant very shaly loam, 15 to 60 percent slopes	1,415	1.8
21	Hector-Rock outcrop complex, 15 to 45 percent slopes	340	0.4
3	Mantachie silt loam, frequently flooded	552	0.7
4	Montevallo-Townley association, steep	53,508	67.2
5	Nauvoo sandy loam, 2 to 6 percent slopes	1,165	1.5
6	Nauvoo sandy loam, 6 to 10 percent slopes	3,880	4.9
7	Nauvoo-Townley association, steep	5,605	7.0
10	Palmerdale very shaly loam, 15 to 60 percent slopes	645	0.8
13	Pruitton-Whitwell association	2,625	3.3
11	Smithdale-Pikeville association, hilly	1,480	1.8
17	Townley silt loam, 2 to 6 percent slopes	905	1.1
18	Townley silt loam, 6 to 15 percent slopes	6,020	7.6
12	Wynnville loam, 2 to 6 percent slopes	580	0.7
	Water	700	0.9
	Total	79,620	100.0

TABLE B3.--CAPABILITY AND YIELDS PER ACRE OF CROPS AND PASTURE

[Yields are those that can be expected under a high level of management. Absence of a yield indicates that th soil is not suited to the crop or the crop generally is not grown on the soil]

Soil name and map symbol	Capability subclass	Corn	Cotton lint	Soybeans	Bahiagrass	Tall fescue	Improved bermuda-grass	Cool seaso grass
		Bu	Lb	Bu	AUM*	AUM*	AUM*	AUM*
2------------------ Allen	3E	75	400	30	6.5	7.0	6.5	---
20----------------- Brilliant	7S	---	---	---	---	---	---	---
21----------------- Hector-Rock outcrop	---	---	---	---	---	---	---	---
3------------------ Mantachie	5W	---	---	---	---	6.5	---	---
4**:								
Montevallo-------	7E	---	---	---	---	---	---	---
Townley-----------	6E	---	---	---	4.0	4.5	4.0	---
5------------------ Nauvoo	2E	75	800	30	6.5	7.0	6.5	---
6------------------ Nauvoo	3E	60	650	25	5.5	6.0	5.5	---
7**:								
Nauvoo------------	6E	---	---	---	4.0	4.5	4.0	---
Townley-----------	6E	---	---	---	4.0	4.5	4.0	---
10----------------- Palmerdale	7S	---	---	---	3.5	4.0	3.5	---
13**:								
Pruitton----------	I	100	750	35	9.0	9.0	8.5	---
Whitwell.								
11**:								
Smithdale---------	7E	---	---	---	---	---	---	---
Pikeville---------	6E	---	---	---	6.5	5.0	6.5	---
17----------------- Townley	3E	55	600	---	6.0	4.5	6.0	---
18----------------- Townley	6E	---	---	---	4.0	8.5	4.0	---
12----------------- Wynnville	2E	75	750	35	8.0		8.0	---

* Animal-unit-month: The amount of forage or feed required to feed one animal unit (one cow, one horse, one mule, five sheep, or five goats) for 30 days.

** See description of the map unit for composition and behavior characteristics of the map unit.

TABLE D.--WOODLAND UNDERSTORY VEGETATION

[Only the soils suitable for production of commercial trees are listed]

Soil name and map symbol	Total production		Characteristic vegetation	Composition
	Kind of year	Dry weight		
		Lb/acre		Pct
3 Mantachie	Favorable	---	Longleaf uniola	35
	Normal	2,000	Pinehill bluestem	20
	Unfavorable	---		
4*: Montevallo	Favorable	---		
	Normal	900		
	Unfavorable	---		
Townley.				

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE E.--WOODLAND MANAGEMENT AND PRODUCTIVITY

[Only the soils suitable for production of commercial trees are listed. Absence of an entry indicates that information was not available]

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
2------------------ Allen	3o7	Slight	Slight	Slight	Slight	Loblolly pine Shortleaf pine Yellow-poplar	80 72 87	Loblolly pine, yellow-poplar.
20----------------- Brilliant	3x9	Severe	Severe	Severe	Slight	American sycamore Eastern cottonwood Loblolly pine Virginia pine	90 90 80 70	American sycamore, Eastern cottonwood, loblolly pine, Virginia pine,
21*: Hector------------	4d3	Severe	Severe	Severe	Moderate	Loblolly pine Shortleaf pine Virginia pine	73 63 61	Loblolly pine, Virginia pine.
Rock outcrop.								
3------------------ Mantachie	1w9	Slight	Severe	Severe	Slight	Green ash Eastern cottonwood Cherrybark oak Loblolly pine Sweetgum Yellow-poplar	80 90 100 98 95 95	Green ash, eastern cottonwood, loblolly pine, sweetgum, yellow-poplar.
4*: Montevallo--------	5d3	Severe	Moderate	Severe	Moderate	Loblolly pine Shortleaf pine Virginia pine	60 50 50	Loblolly pine, Virginia pine.
Townley-----------	4r2	Moderate	Moderate	Slight	Slight	Loblolly pine Virginia pine Shortleaf pine	75 70 59	Loblolly pine, Virginia pine.
5, 6--------------- Nauvoo	2o1	Slight	Slight	Slight	Slight	Loblolly pine Shortleaf pine Virginia pine	90 80 80	Loblolly pine, Virginia pine.
7*: Nauvoo------------	2o1	Slight	Slight	Slight	Slight	Loblolly pine Shortleaf pine Virginia pine Yellow-poplar	90 80 80	Loblolly pine, Virginia pine.
Townley-----------	4r2	Moderate	Moderate	Slight	Slight	Loblolly pine Virginia pine Shortleaf pine	75 70 59	Loblolly pine, Virginia pine.
10----------------- Palmerdale	3x9	Severe	Severe	Severe	Slight	Shortleaf pine Loblolly pine Virginia pine American sycamore	70 80 70 90	Loblolly pine, longleaf pine, Virginia pine, American sycamore.
13*: Pruitton----------	2o7	Slight	Slight	Slight	Slight	Yellow-poplar White oak Loblolly pine Shortleaf pine	100 80 90 80	Yellow-poplar, loblolly pine.
Whitwell----------	2w8	Slight	Moderate	Moderate	Slight	Yellow-poplar Northern red oak Sweetgum Loblolly pine Eastern white pine	95 75 90 90 90	Loblolly pine, sweetgum, American sycamore.

See footnote at end of table.

TABLE 8.--WOODLAND MANAGEMENT AND PRODUCTIVITY--Continued

Soil name and map symbol	Ordination symbol	Management concerns				Potential productivity		Trees to plant
		Erosion hazard	Equipment limitation	Seedling mortality	Windthrow hazard	Common trees	Site index	
11*: Smithdale.								
Pikeville	3o1	Slight	Slight	Slight	Slight	Loblolly pine Shortleaf pine	80 70	Loblolly pine.
17, 18 Townley	4o1	Slight	Slight	Slight	Slight	Loblolly pine Virginia pine Shortleaf pine	75 70 59	Loblolly pine, Virginia pine.
12 Wynnville	3o7	Slight	Slight	Slight	Moderate	Loblolly pine Shortleaf pine Yellow-poplar Southern red oak	76 70 90 70	Loblolly pine, yellow-poplar.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE F.--WILDLIFE HABITAT POTENTIALS

[See text for definitions of "good," "fair," "poor," and "very poor." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Potential for habitat elements							Potential as habitat for--		
	Grain and seed crops	Grasses and legumes	Wild herbaceous plants	Hardwood trees	Coniferous plants	Wetland plants	Shallow water areas	Openland wildlife	Woodland wildlife	Wetland wildlife
2------------------ Allen	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
20----------------- Brilliant	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
21*: Hector------------	Very poor.	Poor	Poor	Poor	Very poor.	Very poor.	Very poor.	Poor	Poor	Very poor.
Rock outcrop.										
3------------------ Mantachie	Poor	Fair	Fair	Good	---	Fair	Fair	Fair	Good	Fair.
4*: Montevallo--------	Very poor.	Poor	Fair	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
Townley-----------	Very poor.	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
5------------------ Nauvoo	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
6------------------ Nauvoo	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
7*: Nauvoo------------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Townley-----------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
10----------------- Palmerdale	Very poor.	Poor	Poor	Fair	Fair	Very poor.	Very poor.	Poor	Fair	Very poor.
13*: Pruitton----------	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.
Whitwell----------	Good	Good	Good	Good	Good	Poor	Poor	Good	Good	Poor.
11*: Smithdale---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
Pikeville---------	Poor	Fair	Good	Good	Good	Very poor.	Very poor.	Fair	Good	Very poor.
17, 18------------- Townley	Fair	Good	Good	Good	Good	Very poor.	Very poor.	Good	Good	Very poor.
12----------------- Wynnville	Good	Good	Good	Good	Good	Poor	Very poor.	Good	Good	Very poor.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE 6.--RECREATIONAL DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
2 Allen	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
20 Brilliant	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.	Severe: slope, small stones.
21*: Hector	Severe: slope.	Severe: slope.	Severe: slope, depth to rock.	Severe: slope.
Rock outcrop.				
3 Mantachie	Severe: floods, wetness.	Moderate: floods.	Severe: floods.	Moderate: wetness, floods.
4*: Montevallo	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, small stones, depth to rock.	Severe: slope, erodes easily.
Townley	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope, erodes easily.
5 Nauvoo	Slight	Slight	Moderate: slope, small stones.	Slight.
6 Nauvoo	Moderate: slope.	Moderate: slope.	Severe: slope.	Slight.
7*: Nauvoo	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Townley	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: erodes easily.
10 Palmerdale	Severe: slope.	Severe: slope.	Severe: slope, small stones.	Severe: slope.
13*: Pruitton	Severe: floods.	Slight	Moderate: floods.	Severe: erodes easily.
Whitwell	Slight	Slight	Slight	Slight.
11*: Smithdale	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
Pikeville	Severe: slope.	Severe: slope.	Severe: slope.	Moderate: slope.
17 Townley	Moderate: small stones, percs slowly.	Moderate: small stones, percs slowly.	Severe: small stones.	Severe: erodes easily.

See footnote at end of table.

TABLE G.--RECREATIONAL DEVELOPMENT--Continued

Soil name and map symbol	Camp areas	Picnic areas	Playgrounds	Paths and trails
18 Townley	Moderate: slope, small stones, percs slowly.	Moderate: slope, small stones, percs slowly.	Severe: slope, small stones.	Severe: erodes easily.
12 Wynnville	Moderate: wetness.	Slight	Moderate: slope, wetness, small stones.	Slight.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE H.--ENGINEERING INDEX PROPERTIES

[The symbol < means less than; > means more than. Absence of an entry indicates that data were not estimated]

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
2----------------- Allen	0-9	Sandy loam-------	ML, CL-ML, SM, SM-SC	A-4	0-5	90-100	75-100	65-98	40-80	<26	NP-7
	9-32	Clay loam, sandy clay loam, loam.	CL-ML, CL	A-4, A-6, A-7-6	0-10	85-100	75-100	65-98	50-80	22-43	5-19
	32-84	Clay loam, sandy clay loam, clay.	CL-ML, CL, SC, SM-SC	A-4, A-6, A-7-6	0-10	85-100	70-95	60-95	45-80	22-48	6-22
20---------------- Brilliant	0-84	Very shaly loam	SM, SC, SM-SC	A-2-4	0-20	60-90	20-60	15-40	9-30	20-30	3-16
21*: Hector-----------	0-5	Fine sandy loam	SM, ML, SM-SC, CL-ML	A-4, A-2	0	80-100	80-100	80-100	30-65	<30	NP-6
	5-18	Fine sandy loam, gravelly fine sandy loam, gravelly loam.	SM, ML, GM, GM-GC	A-4, A-2	0-15	55-100	55-100	45-100	30-65	<30	NP-6
	15	Unweathered bedrock.	---	---	---	---	---	---	---	---	---
Rock outcrop.											
3----------------- Mantachie	0-18	Silt loam---------	ML, CL-ML, CL	A-4	0	100	100	90-100	70-85	<30	NP-10
	18-60	Loam, clay loam, sandy clay loam.	CL, SC, SM-SC, CL-ML	A-4, A-6	0-5	95-100	90-100	80-95	45-80	20-40	5-15
4*: Montevallo------	0-4	Shaly silt loam	ML, SM, GM	A-4	0-5	60-90	60-90	50-80	35-75	<40	NP-10
	4-15	Shaly silt loam, shaly loam, shaly silty clay loam.	SM, GC, ML, CL	A-2, A-4, A-6	0-5	55-90	50-90	30-80	30-75	20-40	5-15
	15-27	Weathered bedrock	---	---	---	---	---	---	---	---	---
Townley----------	0-6	Silt loam--------	ML, CL, CL-ML	A-4	0-2	80-98	70-95	65-90	50-65	15-35	NP-10
	6-19	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0-2	75-95	65-80	60-80	55-75	30-65	12-35
	19-30	Weathered bedrock	---	---	0	---	---	---	---	---	---
	30-50	Unweathered bedrock.	---	---	0	---	---	---	---	---	---
5, 6------------- Nauvoo	0-8	Sandy loam ---------	SM-SC, CL-ML, SC, CL	A-4	0-3	90-100	85-100	55-90	35-65	18-25	4-8
	8-22	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0-3	95-100	90-100	60-95	40-80	25-35	8-14
	22-40	Fine sandy loam, loam, sandy clay loam.	SM-SC, CL-ML, SC, CL	A-4	0-5	90-100	85-100	55-90	35-65	18-25	4-8
	40-50	Weathered bedrock	---	---	---	---	---	---	---	---	---
7*: Nauvoo-----------	0-8	Sandy loam ---------	SM-SC, CL-ML, SC, CL	A-4	0-3	90-100	85-100	55-90	35-65	18-25	4-8
	8-22	Loam, sandy clay loam, clay loam.	SC, CL	A-4, A-6	0-3	95-100	90-100	60-95	40-80	25-35	8-14
	22-40	Fine sandy loam, loam, sandy clay loam.	SM-SC, CL-ML, SC, CL	A-4	0-5	90-100	85-100	55-90	35-65	18-25	4-8
	40-50	Weathered bedrock	---	---	---	---	---	---	---	---	---

See footnote at end of table.

TABLE H.--ENGINEERING INDEX PROPERTIES--Continued

Soil name and map symbol	Depth	USDA texture	Classification		Fragments > 3 inches	Percentage passing sieve number--				Liquid limit	Plasticity index
			Unified	AASHTO		4	10	40	200		
	In				Pct					Pct	
7*: Townley----------	0-6	Silt loam--------	ML, CL, CL-ML	A-4	0-2	80-98	70-95	65-90	50-65	15-35	NP-10
	6-19	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0-2	75-95	65-60	60-80	55-75	30-65	12-35
	19-30	Weathered bedrock	---	---	0	---	---	---	---	---	---
	30-50	Unweathered bedrock.	---	---	0	---	---	---	---	---	---
10--------------- Palmerdale	0-84	Very shaly loam	ML, CL, GM, SC	A-4, A-6	0-10	60-85	55-80	50-75	45-60	25-40	3-16
13*: Pruitton---------	0-5	Silt loam--------	ML, CL, CL-ML	A-4	0	80-100	75-98	65-95	60-95	20-30	3-10
	5-60	Silt loam, loam	ML, CL, CL-ML	A-4, A-6	0	80-100	75-100	65-97	60-90	20-38	5-15
	38-52	Cherty sandy loam, cherty loam, cherty silt loam.	ML, CL, SM, SC	A-1, A-2, A-4, A-6	0-8	40-90	20-75	20-75	15-70	<30	NP-11
Whitwell---------	0-6	Silt loam--------	ML, CL-ML, CL	A-4	0-3	80-100	75-100	70-100	55-95	15-28	3-10
	6-60	Clay loam, loam, silt loam.	CL, CL-ML, ML, SC	A-4, A-6	0-3	80-100	75-100	60-90	40-80	15-35	3-15
11*: Smithdale-------	0-12	Sandy loam-------	SM, SM-SC	A-4	0	100	85-100	60-80	36-49	<20	NP-5
	12-33	Clay loam, sandy clay loam, loam.	SM-SC, SC, CL, CL-ML	A-6, A-4	0	100	85-100	80-95	45-75	23-38	7-15
	33-84	Loam, sandy loam	SM, ML, CL, SC	A-4	0	100	85-100	65-80	36-70	<30	NP-10
Pikeville-------	0-10	Sandy loam-------	SM, ML	A-4	0	90-100	90-100	50-85	36-60	<30	NP-4
	10-34	Sandy clay loam, loam, gravelly loam.	SC, CL, SM-SC	A-4, A-6	0	80-100	65-100	60-90	36-60	20-40	4-17
	34-72	Gravelly sandy loam, gravelly loamy sand, gravelly sandy clay loam.	SC, SM	A-1-B, A-2, A-4, A-6	0	60-90	50-85	45-75	20-45	25-48	2-18
17, 18----------- Townley	0-6	Silt loam--------	ML, CL, CL-ML	A-4	0-2	80-98	70-95	65-90	50-65	15-35	NP-10
	6-19	Silty clay loam, silty clay, clay.	CL, CH, ML, MH	A-6, A-7	0-2	75-95	65-80	60-80	55-75	30-65	12-35
	19-30	Weathered bedrock	---	---	0	---	---	---	---	---	---
	30-50	Unweathered bedrock.	---	---	0	---	---	---	---	---	---
12--------------- Wynnville	0-8	Loam-------------	SM, SM-SC, ML, CL-ML	A-4	0-5	85-100	85-100	70-100	40-90	10-25	NP-7
	8-25	Loam, sandy clay loam, silt loam.	SM-SC, SC, CL-ML, CL	A-4	0-5	85-100	85-100	70-100	36-90	15-30	3-10
	25-38	Loam, sandy clay loam, clay loam.	SM-SC, SC, CL-ML, CL	A-4, A-6	0-5	85-100	85-100	80-100	36-95	20-35	3-13
	38-72	Loam, sandy clay loam, clay loam.	SM-SC, SC, CL-ML, CL	A-4, A-6	0-5	85-100	85-100	80-100	36-95	20-35	3-13

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE J.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS

[The symbol < means less than; > means more than. Entries under "Erosion factors__T" apply to the entire profile. Entries under "Organic matter" apply only to the surface layer. Absence of an entry indicates that data were not available or were not estimated]

Soil name and map symbol	Depth	Clay <2mm	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm³	In/hr	In/in	pH				Pct
2	0-9	---	---	0.6-2.0	0.14-0.19	4.5-5.5	Low	0.24	5	---
Allen	9-32	---	---	0.6-2.0	0.12-0.17	4.5-5.5	Low	0.20		
	32-84	---	---	0.6-2.0	0.10-0.17	4.5-5.5	Low	0.20		
20	0-84	---	---	2.0-6.0	0.06-0.13	6.1-8.4	Low	0.24	5	---
Brilliant										
21*:										
Hector	0-5	---	---	2.0-6.0	0.10-0.14	5.1-6.5	Low	0.17	1	---
	5-18	---	---	2.0-6.0	0.08-0.15	4.5-5.5	Low	0.17		
	15	---	---	---	---	---	---	---		
Rock outcrop.										
3	0-18	---	---	0.6-2.0	0.16-0.20	4.5-5.5	Low	0.28	5	---
Mantachie	18-60	---	---	0.6-2.0	0.14-0.20	4.5-5.5	Low	0.28		
4*:										
Montevallo	0-4	---	---	0.6-2.0	0.09-0.18	4.5-6.0	Low	0.37	2	---
	4-15	---	---	0.6-2.0	0.02-0.12	4.5-6.0	Low	0.37		
	15-27	---	---	---	---	---	---	---		
Townley	0-6	---	---	0.6-2.0	0.12-0.14	4.5-5.5	Low	0.37	3	---
	6-19	---	---	0.06-0.2	0.12-0.18	4.5-5.5	Moderate	0.28		
	19-30	---	---	---	---	---	---	---		
	30-50	---	---	---	---	---	---	---		
5, 6	0-8	---	---	2.0-6.0	0.13-0.17	4.5-5.5	Low	0.28	3	---
Nauvoo	8-22	---	---	0.6-2.0	0.14-0.20	4.5-5.5	Low	0.32		
	22-40	---	---	0.6-2.0	0.11-0.17	4.5-5.5	Low	0.32		
	40-50	---	---	---	---	---	---	---		
7*:										
Nauvoo	0-8	---	---	2.0-6.0	0.13-0.17	4.5-5.5	Low	0.28	3	---
	8-22	---	---	0.6-2.0	0.14-0.20	4.5-5.5	Low	0.32		
	22-40	---	---	0.6-2.0	0.11-0.17	4.5-5.5	Low	0.32		
	40-50	---	---	---	---	---	---	---		
Townley	0-6	---	---	0.6-2.0	0.12-0.14	4.5-5.5	Low	0.37	3	---
	6-19	---	---	0.06-0.2	0.12-0.18	4.5-5.5	Moderate	0.28		
	19-30	---	---	---	---	---	---	---		
	30-50	---	---	---	---	---	---	---		
10	0-34	---	---	2.0-6.0	0.06-0.13	3.6-5.5	Low	0.24	5	---
Palmerdale										
13*:										
Pruitton	0-5	---	---	2.0-6.0	0.18-0.22	5.1-6.0	Low	0.37	---	---
	5-60	---	---	2.0-6.0	0.16-0.20	4.5-6.0	Low	0.32		
	38-52	---	---	2.0-6.0	0.05-0.12	4.5-6.0	Low	0.24		
Whitwell	0-6	---	---	0.6-2.0	0.15-0.20	4.5-6.0	Low	0.32	4	---
	6-60	---	---	0.6-2.0	0.14-0.20	4.5-5.5	Low	0.32		
11*:										
Smithdale	0-12	---	---	2.0-6.0	0.14-0.16	4.5-5.5	Low	0.28	5	---
	12-33	---	---	0.6-2.0	0.15-0.17	4.5-5.5	Low	0.24		
	33-84	---	---	2.0-6.0	0.14-0.16	4.5-5.5	Low	0.28		
Pikeville	0-10	---	---	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.24	4	---
	10-34	---	---	0.6-2.0	0.10-0.15	4.5-5.5	Low	0.37		
	34-72	---	---	2.0-6.0	0.05-0.10	4.5-5.5	Low	0.10		

See footnote at end of table.

TABLE J.--PHYSICAL AND CHEMICAL PROPERTIES OF SOILS--Continued

Soil name and map symbol	Depth	Clay <2mm	Moist bulk density	Permeability	Available water capacity	Soil reaction	Shrink-swell potential	Erosion factors		Organic matter
								K	T	
	In	Pct	G/cm^3	In/hr	In/in	pH				Pct
17, 18----------- Townley	0-6	---	---	0.6-2.0	0.12-0.14	4.5-5.5	Low-----------	0.37	3	---
	6-19	---	---	0.06-0.2	0.12-0.18	4.5-5.5	Moderate-----	0.28		
	19-30	---	---	---	---	---	-------------	----		
	30-50	---	---	---	---	---	-------------	----		
12--------------- Wynnville	0-8	---	---	0.6-2.0	0.15-0.20	3.6-5.5	Low-----------	0.24	3	---
	8-25	---	---	0.6-2.0	0.15-0.20	3.6-5.5	Low-----------	0.24		
	25-38	---	---	0.06-0.2	0.08-0.12	3.6-5.5	Low-----------	0.20		
	38-72	---	---	0.2-0.6	0.12-0.17	3.6-5.5	Low-----------	0.20		

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE K1.--WATER FEATURES

[The definitions of "flooding" and "water table" in the Glossary explain terms such as "rare," "brief," "apparent," and "perched." The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Hydrologic group	Flooding			High water table		
		Frequency	Duration	Months	Depth	Kind	Months
					Ft		
2-------------------------- Allen	B	None-------------	---	---	>6.0	---	---
20------------------------- Brilliant	B	None-------------	---	---	>6.0	---	---
21*:							
Hector--------------------	D	None-------------	---	---	>6.0	---	---
Rock outcrop.							
3-------------------------- Mantachie	C	Frequent----------	Brief-----------	Jan-Mar	1.0-1.5	Apparent	Dec-Mar
4*:							
Montevallo---------------	D	None-------------	---	---	>6.0	---	---
Townley------------------	C	None-------------	---	---	>6.0	---	---
5, 6---------------------- Nauvoo	B	None-------------	---	---	>6.0	---	---
7*:							
Nauvoo-------------------	B	None-------------	---	---	>6.0	---	---
Townley------------------	C	None-------------	---	---	>6.0	---	---
10------------------------ Palmerdale	B	None-------------	---	---	>6.0	---	---
13*:							
Pruitton-----------------	B	Occasional------	Very brief----	Nov-Feb	>6.0	---	---
Whitwell-----------------	C	None to common	Very brief----	Dec-Mar	2.0-3.0	Apparent	Dec-Mar
11*:							
Smithdale----------------	B	None-------------	--	---	>6.0	---	---
Pikeville----------------	B	None-------------	---	---	>6.0	---	---
17, 18-------------------- Townley	C	None-------------	---	---	>6.0	---	---
12------------------------ Wynnville	C	None-------------	---	---	1.5-2.5	Perched	Dec-Feb

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE K2.--SOIL FEATURES

[The symbol < means less than; > means more than. Absence of an entry indicates that the feature is not a concern]

Soil name and map symbol	Bedrock		Cemented pan		Subsidence		Potential frost action	Risk of corrosion	
	Depth	Hardness	Depth	Hardness	Initial	Total		Uncoated steel	Concrete
	In		In		In	In			
2 Allen	>60	---	---	---	---	---	---	Low	Moderate.
20 Brilliant	>60	---	---	---	---	---	---	Low	Low.
21*:									
Hector	10-20	Hard	---	---	---	---	---	Low	Moderate.
Rock outcrop.									
3 Mantachie	>60	---	---	---	---	---	---	High	High.
4*:									
Montevallo	10-20	Soft	---	---	---	---	---	Moderate	Moderate.
Townley	25-40	Soft	---	---	---	---	---	Moderate	High.
5, 6 Nauvoo	40-60	Soft	---	---	---	---	---	Low	High.
7*:									
Nauvoo	40-60	Soft	---	---	---	---	---	Low	High.
Townley	25-40	Soft	---	---	---	---	---	Moderate	High.
10 Palmerdale	>60	---	---	---	---	---	---	Moderate	High.
13*:									
Pruitton	>60	---	---	---	---	---	---	Low	Moderate.
Whitwell	>60	---	---	---	---	---	---	Moderate	Moderate.
11*:									
Smithdale	>60	---	---	---	---	---	---	Low	Moderate.
Pikeville	>60	---	---	---	---	---	---	Low	Moderate.
17, 18 Townley	25-40	Soft	---	---	---	---	---	Moderate	High.
12 Wynnville	>60	---	---	---	---	---	---	Moderate	High.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE L.--SANITARY FACILITIES

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," "good," "fair," and other terms. Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
2 Allen	Moderate: slope.	Severe: slope.	Slight	Moderate: slope.	Fair: too clayey, slope.
20 Brilliant	Severe: slope.	Severe: seepage, slope.	Severe: slope.	Severe: seepage, slope.	Poor: small stones, slope.
21*: Hector	Severe: slope, depth to rock.	Severe: slope, depth to rock, seepage.	Severe: slope, depth to rock, seepage.	Severe: slope, seepage.	Poor: slope, thin layer.
Rock outcrop.					
3 Mantachie	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Poor: wetness.
4*: Montevallo	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope.	Poor: area reclaim, small stones, slope, thin layer.
Townley	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, too clayey, slope, thin layer.
5 Nauvoo	Moderate: depth to rock,	Moderate: seepage, depth to rock, slope.	Severe: depth to rock.	Slight	Fair: area reclaim
6 Nauvoo	Moderate: depth to rock, slope.	Severe: slope.	Severe: depth to rock.	Moderate: slope.	Fair: area reclaim, slope.
7*: Nauvoo	Severe: slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Poor: slope.
Townley	Severe: depth to rock, percs slowly, slope.	Severe: depth to rock, slope.	Severe: depth to rock, slope, too clayey.	Severe: depth to rock, slope.	Poor: area reclaim, too clayey, slope, thin layer.
10 Palmerdale	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: small stones, slope.
13*: Pruitton	Severe: floods.	Severe: seepage, floods.	Severe: floods, seepage.	Severe: floods, seepage.	Good.
Whitwell	Severe: wetness.	Severe: wetness.	Severe: wetness.	Severe: wetness.	Good.

See footnote at end of table.

TABLE L.--SANITARY FACILITIES--Continued

Soil name and map symbol	Septic tank absorption fields	Sewage lagoon areas	Trench sanitary landfill	Area sanitary landfill	Daily cover for landfill
11*:					
Smithdale	Severe: slope.	Severe: seepage, slope.	Moderate: slope.	Severe: slope.	Poor: slope.
Pikeville	Severe: slope.	Severe: seepage, slope.	Severe: seepage, slope.	Severe: seepage, slope.	Poor: slope.
17 Townley	Severe: depth to rock, percs slowly.	Severe: depth to rock.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, thin layer.
18 Townley	Severe: depth to rock, percs slowly.	Severe: depth to rock, slope.	Severe: depth to rock, too clayey.	Severe: depth to rock.	Poor: area reclaim, too clayey, thin layer.
12 Wynnville	Severe: percs slowly, wetness.	Severe: wetness.	Severe: depth to rock, wetness.	Severe: wetness.	Fair: thin layer.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE M.--BUILDING SITE DEVELOPMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
2----------------- Allen	Moderate: slope, too clayey.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope, low strength.	
20----------------- Brilliant	Severe: slope	Severe: slope, differential se settling.	Severe: slope, differential settling.	Severe: slope, differential settling	Severe: slope differential settling.	Severe: small stones, slope.
21*:						
Hector------------	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	Severe: slope, depth to rock.	
Rock outcrop.						
3----------------- Mantachie	Severe: wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods, wetness.	Severe: floods.	
4*:						
Montevallo--------	Severe: depth to rock, slope.	Severe: slope.	Severe: depth to rock, slope.	Severe: slope.	Severe: slope.	Severe: droughty, slope, thin layer.
Townley-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope.	Severe: slope.
5----------------- Nauvoo	Slight---------	Slight---------	Slight---------	Moderate: slope.	Slight---------	Slight.
6----------------- Nauvoo	Moderate: slope.	Moderate: slope.	Moderate: slope.	Severe: slope.	Moderate: slope.	Moderate: slope.
7*:						
Nauvoo------------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
Townley-----------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: low strength, slope	Severe: slope.
10---------------- Palmerdale	Severe: slope.	Severe: slope, differential settling.	Severe: slope, differential settling.	Severe: slope, differential settling.	Severe: slope, differential settling.	Severe: small stones, slope.
13*:						
Pruitton----------	Moderate: floods.	Severe: floods.	Severe: floods.	Severe: floods.	Severe: floods.	
Whitwell----------	Moderate: wetness.	Moderate: wetness.	Severe: wetness.	Moderate: wetness.	Moderate: low strength.	
11*:						
Smithdale---------	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	
Pikeville---------	Severe: cutbanks cave, slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.	Severe: slope.
17---------------- Townley	Moderate: depth to rock, too clayey.	Moderate: shrink-swell.	Moderate: depth to rock, shrink-swell.	Moderate: shrink-swell, slope.	Severe: low strength.	Moderate: small stones, thin layer.

See footnote at end of table.

TABLE M.--BUILDING SITE DEVELOPMENT--Continued

Soil name and map symbol	Shallow excavations	Dwellings without basements	Dwellings with basements	Small commercial buildings	Local roads and streets	Lawns and landscaping
18------------------ Townley	Moderate: depth to rock, too clayey, slope.	Moderate: shrink-swell, slope.	Moderate: depth to rock, shrink-swell, slope.	Severe: shrink-swell, slope.	Severe: low strength.	Moderate: small stones, slope, thin layer.
12------------------ Wynnville	Severe: wetness.	Moderate: wetness.	Moderate: wetness, depth to rock.	Moderate: wetness, slope.	Moderate: low strength.	

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE N.--CONSTRUCTION MATERIALS

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "good," "fair," "poor," "probable," and "improbable." Absence of an entry indicates that the soil was not rated]

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
2 Allen	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: slope.
20 Brilliant	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
21*: Hector	Poor: slope, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope, thin layer, small stones.
Rock outcrop.				
3 Mantachie	Fair: wetness.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
4*: Montevallo	Poor: area reclaim, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: area reclaim, small stones, thin layer, slope.
Townley	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, thin layer, slope.
5 Nauvoo	Fair: area reclaim, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones.
6 Nauvoo	Fair: area reclaim, thin layer.	Improbable: excess fines.	Improbable: excess fines.	Fair: small stones, slope.
7*: Nauvoo	Fair: area reclaim, thin layer, slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Townley	Poor: area reclaim	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, thin layer, slope.
10 Palmerdale	Poor: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim, slope.
13*: Pruitton	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: small stones, area reclaim.
Whitwell	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Fair: thin layer, small stones.

See footnote at end of table.

TABLE N.--CONSTRUCTION MATERIALS--Continued

Soil name and map symbol	Roadfill	Sand	Gravel	Topsoil
11*:				
Smithdale	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
Pikeville	Fair: slope.	Improbable: excess fines.	Improbable: excess fines.	Poor: slope.
17, 18 Townley	Poor: area reclaim, low strength.	Improbable: excess fines.	Improbable: excess fines.	Poor: too clayey, thin layer.
12 Wynnville	Fair: low strength.	Improbable: excess fines.	Improbable: excess fines.	Good.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE P.--WATER MANAGEMENT

[Some terms that describe restrictive soil features are defined in the Glossary. See text for definitions of "slight," "moderate," and "severe." Absence of an entry indicates that the soil was not evaluated]

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
2 Allen	Moderate: seepage.	Slight	Severe: no water.	Not needed	Favorable	Favorable.
20 Brilliant	Severe: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope, large stones.	Large stones, slope, droughty.
21*: Hector	Severe: depth to rock, seepage.	Severe: thin layer.	Severe: no water.	Not needed	Slope, depth to rock, rooting depth.	Droughty, rooting depth, slope.
Rock outcrop.						
3 Mantachie	Moderate: seepage.	Severe: piping, wetness.	Moderate: slow refill.	Floods	Wetness	Wetness.
4*: Montevallo	Severe: depth to rock, slope.	Severe: thin layer.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, droughty.
Townley	Severe: slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
5 Nauvoo	Moderate: seepage, depth to rock, slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Favorable	Favorable.
6 Nauvoo	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope	Slope.
7*: Nauvoo	Severe: slope.	Moderate: thin layer.	Severe: no water.	Deep to water	Slope	Slope.
Townley	Severe: slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
10 Palmerdale	Severe: seepage, slope.	Moderate: piping.	Severe: no water.	Deep to water	Slope	Slope, droughty.
13*: Pruitton	Severe: seepage.	Severe: piping.	Severe: no water.	Deep to water	Erodes easily	Erodes easily.
Whitwell	Moderate: seepage.	Slight	Severe: no water.	Favorable	Favorable	Favorable.
11*: Smithdale	Severe: seepage.	Moderate: piping, unstable fill.	Severe: no water.	Not needed, slope.	Slope, erodes easily.	Slope, erodes easily.
Pikeville	Severe: seepage, slope.	Severe: seepage.	Severe: no water.	Deep to water	Slope	Slope.
17 Townley	Moderate: depth to rock, slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Depth to rock, erodes easily.	Erodes easily, depth to rock.

See footnote at end of table.

TABLE P.--WATER MANAGEMENT--Continued

Soil name and map symbol	Limitations for--			Features affecting--		
	Pond reservoir areas	Embankments, dikes, and levees	Aquifer-fed excavated ponds	Drainage	Terraces and diversions	Grassed waterways
18----------------- Townley	Severe: slope.	Moderate: thin layer, hard to pack.	Severe: no water.	Deep to water	Slope, depth to rock, erodes easily.	Slope, erodes easily, depth to rock.
12----------------- Wynnville	Moderate: seepage.	Moderate: piping.	Severe: no water.	Slope-----------	Wetness---------	Slope.

* See description of the map unit for composition and behavior characteristics of the map unit.

TABLE Q.--CLASSIFICATION OF THE SOILS

Soil name	Family or higher taxonomic class
Allen	Fine-loamy, siliceous, thermic Typic Paleudults
Brilliant	Loamy-skeletal, mixed, nonacid, thermic Typic Udorthents
Hector	Loamy, siliceous, thermic Lithic Dystrochrepts
Mantachie	Fine-loamy, siliceous, acid, thermic Aeric Fluvaquents
Montevallo	Loamy-skeletal, mixed, thermic, shallow Typic Dystrochrepts
Nauvoo	Fine-loamy, siliceous, thermic Typic Hapludults
Palmerdale	Loamy-skeletal, mixed, acid, thermic Typic Udorthents
Pikeville	Fine-loamy, siliceous, thermic Typic Paleudults
Pruitton	Fine-loamy, siliceous, thermic Fluventic Dystrochrepts
Smithdale	Fine-loamy, siliceous, thermic Typic Paleudults
Townley	Clayey, mixed, thermic Typic Hapludults
Whitwell	Fine-loamy, siliceous, thermic Aquic Hapludults
Wynnville	Fine-loamy, siliceous, thermic Glossic Fragiudults

References

(1) Bowen, Charles D., Soil Survey of Blount County, Alabama (awaiting publication). Soil Conservation Service, U. S. Dept. of Agriculture.

(2) United States Department of Agriculture. 1951. Soil Survey Manual. U.S. Dept. of Agriculture Handbook 18, 503pp., illus. (Supplements replacing pp. 173-183 issued May 1962.)

(3) United States Department of Agriculture. 1975. Soil Taxonomy: a basic system of soil classification for making and interpreting soil surveys. Soil Conservation Service, U. S. Dept. of Agriculture Handbook 436, 754 pp., illus.

(4) Wahl, K. D. and O'Rear, D. M. 1972. Geologic Map of Walker County, Alabama. United States Geological Survey, map 123.

(5) United States Department of Agriculture. 1908. Soil Survey of Jefferson County, Alabama. (Out of print)

(6) United States Department of Agriculture. 1915. Soil Survey of Walker County, Alabama. (Out of print)

Glossary

Alluvium. Material, such as sand, silt, or clay, deposited on land by streams.

Area reclaim. An area difficult to reclaim after the removal of soil for construction and other uses. Revegetation and erosion control are extremely difficult.

Association, soil. A group of soils geographically associated in a characteristic repeating pattern and defined and delineated as a single mapping unit.

Available water capacity (available moisture capacity). The capacity of soils to hold water available for use by most plants. It is commonly defined as the difference between the amount of soil water at field moisture capacity and the amount at wilting point. It is commonly expressed as inches of water per inch of soil. The capacity, in inches, in a 60-inch profile or to a limiting layer is expressed as--

	Inches
Very low	0 to 3
Low	3 to 6
Moderate	6 to 9
High	More than 9

Base saturation. The degree to which material having base exchange properties is saturated with exchangeable bases (sum of Ca, Mg, Na, K), expressed as a percentage of the exchange capacity.

Bedrock. The solid rock that underlies the soil and other unconsolidated material or that is exposed at the surface.

Bottom land. The normal flood plain of a stream, subject to frequent flooding.

Boulders. Rock fragments larger than 2 feet (60 centimeters) in diameter.

Clay. As a soil separate, the mineral soil particles less than 0.002 millimeter in diameter. As a soil textural class, soil material that is 40 percent or more clay, less than 45 percent sand, and less than 40 percent silt.

Clay film. A thin coating of oriented clay on the surface of a soil aggregate or lining pores or root channels. Synonyms: clay coat, clay skin.

Coarse fragments. Mineral or rock particles up to 3 inches (2 millimeters to 7.5 centimeters) in diameter.

Coarse textured (light textured) soil. Sand or loamy sand.

Colluvium. Soil material, rock fragments, or both moved by creep, slide, or local wash and deposited at the bases of steep slopes.

Complex slope. Irregular or variable slope. Planning or constructing terraces, diversions, and other water-control measures is difficult.

Complex, soil. A mapping unit of two or more kinds of soil occurring in such an intricate pattern that they cannot be shown separately on a soil map at the selected scale of mapping and publication.

Compressible. Excessive decrease in volume of soft soil under load.

Concretions. Grains, pellets, or nodules of various sizes, shapes, and colors consisting of concentrated compounds or cemented soil grains. The composition of most concretions is unlike that of the surrounding soil. Calcium carbonate and iron oxide are common compounds in concretions.

Consistence, soil. The feel of the soil and the ease with which a lump can be crushed by the fingers. Terms commonly used to describe consistence are--

Loose.--Noncoherent when dry or moist; does not hold together in a mass.

Friable.--When moist, crushes easily under gentle pressure between thumb and forefinger and can be pressed together into a lump.

Firm.--When moist, crushes under moderate pressure between thumb and forefinger, but resistance is distinctly noticeable.

Plastic.--When wet, readily deformed by moderate pressure but can be pressed into a lump; will form a "wire" when rolled between thumb and forefinger.

Sticky.--When wet, adheres to other material and tends to stretch somewhat and pull apart rather than to pull free from other material.

Hard.--When dry, moderately resistant to pressure; can be broken with difficulty between thumb and forefinger.

Soft.--When dry, breaks into powder or individual grains under very slight pressure.

Cemented.--Hard; little affected by moistening.

Contour stripcropping (or contour farming). Growing crops in strips that follow the contour. Strips of grass or close-growing crops are alternated with strips of clean-tilled crops or summer fallow.

Control section. The part of the soil on which classification is based. The thickness varies among different kinds of soil, but for many it is 40 or 80 inches (1 or 2 meters).

Corrosive. High risk of corrosion to uncoated steel or deterioration of concrete.

Cover crop. A close-growing crop grown primarily to improve and protect the soil between periods of regular crop production, or a crop grown between trees and vines in orchards and vineyards.

Cutbanks cave. Unstable walls of cuts made by earth-moving equipment. The soil sloughs easily.

Depth to rock. Bedrock at a depth that adversely affects the specified use.

Drainage class (natural). Refers to the frequency and duration of periods of saturation or partial saturation during soil formation, as opposed to altered drainage, which is commonly the result of artificial drainage or irrigation but may be caused by the sudden deepening of channels or the blocking of drainage outlets. Seven classes of natural soil drainage are recognized:

Excessively drained.--Water is removed from the soil very rapidly. Excessively drained soils are commonly very coarse textured, rocks, or shallow. Some are steep. All are free of the mottling related to wetness.

Somewhat excessively drained.--Water is removed from the soil rapidly. Many somewhat excessively drained soils are sandy and rapidly pervious. Some are shallow. Some are so steep that much of the water they receive is lost as runoff. All are free of the mottling related to wetness.

Well drained.--Water is removed from the soil readily, but not rapidly. It is available to plants throughout most of the growing season, and wetness does not inhibit growth of roots for significant periods during most growing seasons. Well drained soils are commonly medium textured. They are mainly free of mottling.

Moderately well drained.--Water is removed from the soil somewhat slowly during some periods. Moderately well drained soils are wet for only a short time during the growing season, but periodically for long enough that most mesophytic crops are affected. They commonly have a slowly pervious layer within or directly below the solum, or periodically receive high rainfall, or both.

Somewhat poorly drained.--Water is removed slowly enough that the soil is wet for significant periods during the growing season. Wetness markedly restricts the growth of mesophytic crops unless artificial drainage is provided. Somewhat poorly drained soils commonly have a slowly pervious layer, a high water table, additional water from seepage, nearly continuous rainfall, or a combination of these.

Poorly drained.--Water is removed so slowly that the soil is saturated periodically during the growing season or remains wet for long periods. Free water is commonly at or near the surface for long enough during the growing season that most mesophytic crops cannot be grown unless the soil is artificially drained. The soil is not continuously saturated in layers directly below plow depth. Poor drainage results from a high water table, a slowly pervious layer within the profile, seepage, nearly continuous rainfall, or a combination of these.

Very poorly drained.--Water is removed from the soil so slowly that free water remains at or on the surface during most of the growing season. Unless the soil is artifically drained, most mesophytic crops cannot be grown. Very poorly drained soils are commonly level

or depressed and are frequently ponded. Yet, where rainfall is high and nearly continuous, they can have moderate or high slope gradients, as for example in "hillpeats" and "climatic moors."

Drainage, surface. Runoff, or surface flow of water, from an area.

Erosion. The wearing away of the land surface by running water, wind, ice, or other geologic agents and by such processes as gravitational creep.

Fast intake. The rapid movement of water into the soil.

Favorable. Favorable soil features for the specified use.

Fertility, soil. The quality that enables a soil to provide plant nutrients, in adequate amounts and in proper balance, for the growth of specified plants when light, moisture, temperature, tilth, and other growth factors are favorable.

Field moisture capacity. The moisture content of a soil, expressed as a percentage of the ovendry weight, after the gravitational, or free, water has drained away; the field moisture content 2 or 3 days after a soaking rain; also called normal field capacity, normal moisture capacity, or capillary capacity.

Fine textured (heavy textured) soil. Sandy clay, silty clay, and clay.

First bottom. The normal flood plain of a stream, subject to frequent or occasional flooding.

Flooding. The temporary covering of soil with water from overflowing streams, runoff from adjacent slopes, and tides. Frequency, duration, and probable dates of occurrence are estimated. Frequency is expressed as none, rare, occasional, and frequent. None means that flooding is not probable; rare that it is unlikely but possible under unusual weather conditions; occasional that is occurs on an average of once or less in 2 years; and frequent that it occurs on an average of more than once in 2 years. Duration is expressed as very brief if less than 2 days, brief if 2 to 7 days, and long if more than 7 days. Probable dates are expressed months; November-May, for example,

means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forage. Plant material used as feed by domestic animals. Forage can be grazed or cut for hay.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material from 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table, which is the upper limit of saturation.

Gully. A minature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

means that flooding can occur during the period November through May. Water standing for short periods after rainfall or commonly covering swamps and marshes is not considered flooding.

Flood plain. A nearly level alluvial plain that borders a stream and is subject to flooding unless protected artificially.

Foot slope. The inclined surface at the base of a hill.

Forage. Plant material used as feed by domestic animals. Forage can be grazed or cut for hay.

Fragipan. A loamy, brittle subsurface horizon low in porosity and content of organic matter and low or moderate in clay but high in silt or very fine sand. A fragipan appears cemented and restricts roots. When dry, it is hard or very hard and has a higher bulk density than the horizon or horizons above. When moist, it tends to rupture suddenly under pressure rather than to deform slowly.

Grassed waterway. A natural or constructed waterway, typically broad and shallow, seeded to grass as protection against erosion. Conducts surface water away from cropland.

Gravel. Rounded or angular fragments of rock up to 3 inches (2 millimeters to 7.5 centimeters) in diameter. An individual piece is a pebble.

Gravelly soil material. Material from 15 to 50 percent, by volume, rounded or angular rock fragments, not prominently flattened, up to 3 inches (7.5 centimeters) in diameter.

Ground water (geology). Water filling all the unblocked pores of underlying material below the water table, which is the upper limit of saturation.

Gully. A miniature valley with steep sides cut by running water and through which water ordinarily runs only after rainfall. The distinction between a gully and a rill is one of depth. A gully generally is an obstacle to farm machinery and is too deep to be obliterated by ordinary tillage; a rill is of lesser depth and can be smoothed over by ordinary tillage.

Habitat. The natural abode of a plant or animal; refers to the kind of environment in which a plant or animal normally lives, as opposed to the range or geographical distribution.

Hardpan. A hardened or cemented soil horizon, or layer. The soil material is sandy, loamy, or clayey and is cemented by iron oxide, silica, calcium carbonate, or other substance.

Horizon, soil. A layer of soil, approximately parallel to the surface, having distinct characteristics produced by soil-forming processes. The major horizons of mineral soil are as follows:

A horizon.--The mineral horizon, formed or forming at or near the surface, in which an accumulation of humified organic matter is mixed with the mineral material. Also, a plowed surface horizon most of which was originally part of a B horizon.

A2 horizon.--A mineral horizon, mainly a residual concentration of sand and silt high in content of resistant minerals as a result of the loss of silicate clay, iron, aluminum, or a combination of these.

B horizon.--The mineral horizon below an A horizon. The B horizon is in part a layer of change from the overlying A to the underlying C horizon. The B horizon also has distinctive characterisitcs caused (1) by accumulation of clay, sesquioxides, humus, or a combination of these; (2) by prismatic or blocky structure; (3) by redder or browner colors than those in the A horizon; or (4) by a combination of these. The combined A and B horizons are generally called the solum, or true soil. If a soil lacks a B horizon, the A horizon alone is the solum.

C horizon.--The mineral horizon or layer, excluding indurated bedrock, that is little affected by soil-forming processes and does not have the properties typical of the A or B horizon. The material of a C horizon may be either like or unlike that from which the solum is presumed to have formed. If the material is known to differ from that in the solum the Roman numeral II precedes the letter C.

R layer.--Consolidated rock beneath the soil. The rock commonly underlies a C horizon, but can be directly below an A or a B horizon.

Hydrologic soil groups. Refers to soils grouped according to their runoff-producing characteristics. The chief consideration is the inherent capacity of soil bare of vegetation to permit infiltration. The slope and the kind of plant cover are not considered, but are separate factors in predicting runoff. Soils are assigned to four groups. In group A are soils having a high infiltration rate when thoroughly wet and having a low runoff potential. They are mainly deep, well drained, and sandy or gravelly. In group D, at the other extreme, are soils having a very slow infiltration rate and thus a high runoff potential. They have a claypan or clay layer at or near the surface, have a permenent high water table, or are shallow over nearly impervious bedrock or other material. A soil is assigned to two hydrologic groups if part of the acreage is artificially drained and part is undrained.

Large stones. Rock fragments 10 inches (25 centimeters) or more across. Large stones adversely affect the specified use.

Leaching. The removal of soluble material from soil or other material by percolating water.

Light textured soil. Sand and loamy sand.

Liquid limit. The moisture content at which the soil passes from a plastic to a liquid state.

Loam. Soil material that is 7 to 27 percent clay particles, 28 to 50 percent silt particles, and less than 52 percent sand particles.

Low strength. Inadequate strength for supporting loads.

Medium textured soil. Very fine sandy loam, loam, silt loam, or silt.

Minimum tillage. Only the tillage essential to crop production and prevention of soil damage.

Morphology, soil. The physical makeup of the soil, including the texture, structure, porosity, consistence, color, and other physical, mineral, and biological properties of the various horizons, and the thickness and arrangement of those horizons in the soil profile.

Mottling, soil. Irregular spots of different colors that vary in number and size. Mottling generally indicates poor aeration and impeded drainage. Descriptive terms are as follows:

abundance--few, common, and many; size--fine, medium, and coarse; and contrast--faint, distinct, and prominent. The size measurements are of the diameter along the greatest dimension. Fine indicates less than 5 millimeters (about 0.2 inch); medium, from 5 to 15 millimeters (about 0.2 to 0.6 inch); and coarse, more than 15 millimeters (about 0.6 inch).

Munsell notation. A designation of color by degrees of the three single variables--hue, value, and chroma. For example, a notation of 10YR 6/4 is a color of 10YR hue, value of 6, and chroma of 4.

Parent material. The great variety of unconsolidated organic and mineral material in which soil forms. Consolidated bedrock is not yet parent material by this concept.

Ped. An individual natural soil aggregate, such as a granule, a prism, or a block.

Pedon. The smallest volume that can be called "a soil." A pedon is three dimensional and large enough to permit study of all horizons. Its area ranges from about 10 to 100 square feet (1 square meter to 10 square meters), depending on the variability of the soil.

Percolation. The downward movement of water through the soil.

Percs slowly. The slow movement of water through the soil adversely affecting the specified use.

Permeability. The quality that enables the soil to transmit water or air, measured as the number of inches per hour that water moves through the soil. Terms describing permeability are very slow (less than 0.06 inch), slow (0.06 to 0.20 inch), moderately slow (0.2 to 0.6 inch), moderate (0.6 to 2.0 inches), moderately rapid (2.0 to 6.0 inches), rapid (6.0 to 20 inches), and very rapid (more than 20 inches).

Phase, soil. A subdivision of a soil series or other unit in the soil classification system based on differences in the soil that affect its management. A soil series, for example, may be divided into phases on the bases of differences in slope, stoniness, thickness, or some other characteristic that affects management. These differences are too small to justify separate series.

pH value. (See Reaction, soil). A numerical designation of acidity and alkalinity in soil.

Plasticity index. The numerical difference between the liquid limit and the plastic limit; the range of moisture content within which the soil remains plastic.

Plastic limit. The moisture content at which a soil changes from a semisolid to a plastic state.

Profile, soil. A vertical section of the soil extending through all its horizons and into the parent material.

Reaction, soil. The degree of acidity or alkalinity of a soil, expressed in pH values. A soil that tests to pH 7.0 is described as precisely neutral in reaction because it is neither acid nor alkaline. The degree of acidity or alkalinity is expressed as--

	pH		pH
Extremely acid	Below 4.5	Neutral	6.6 to 7.3
Very strongly acid	4.5 to 5.0	Mildly alkaline	7.4 to 7.8
Strongly acid	5.1 to 5.5	Moderately alkaline	7.9 to 8.4
Medium acid	5.6 to 6.0	Strongly alkaline	8.5 to 9.0
Slightly acid	6.1 to 6.5	Very strongly alkaline	9.1 or higher

Relief. The elevations or inequalities of a land surface, considered collectively.

Residuum (residual soil material). Unconsolidated, weathered, or partly weathered mineral material that accumulates over disintegrating rock.

Rock fragments. Rock or mineral fragments having a diameter of 2 millimeters or more; for example, pebbles, cobbles, stones, and boulders.

Rooting depth. Shallow root zone. The soil is shallow over a layer that greatly restricts roots. See Root zone.

Root zone. The part of the soil that can be penetrated by palnt roots.

Runoff. The precipitation discharged in stream channels from a drainage area. The water that flows off the land surface without sinking in is called surface runoff; that which enters the ground before reaching surface streams is called ground-water runoff or seepage flow from ground water.

Sand. As a soil separate, individual rock or mineral fragments from 0.05 millimeter to 2.0 millimeters in diameter. Most sand grains consist of quartz. As a soil textural class, a soil that is 85 percent or more sand and not more than 10 percent clay.

Sandstone. Sedimentary rock containing dominantly sand-size particles.

Seepage. The rapid movement of water through the soil. Seepage adversely affects the specified use.

Series, soil. A group of soils, formed from a particular type of parent material, having horizons that, except for the texture of the A or surface horizon, are similar in all profile characteristics and in arrangement in the soil profile. Among these characteristics are color, texture, structure, reaction, consistence, and mineralogical and chemical composition.

Shale. Sedimentary rock formed by the hardening of a clay deposit.

Sheet erosion. The removal of a fairly uniform layer of soil material from the land surface by the action of rainfall and runoff water.

Shrink-swell. The shrinking of soil when dry and the swelling when wet. Shrinking and swelling can damage roads, dams, building foundations, and other structures. It can also damage plant roots.

Silt. As a soil separate, individual mineral particles that range in diameter from the upper limit of clay (0.002 millimeter) to the lower limit of very fine sand (0.05 millimeter). As a soil textural class, soil that is 80 percent or more silt and less than 12 percent clay.

Siltstone. Sedimentary rock made up of dominantly silt-sized particles.

Site index. A designation of the quality of a forest site based on the height of the dominant stand at an arbitrarily chosen age. For example, if the average height attained by dominant and codiminant trees in a fully stocked stand at the age of 50 years is 75 feet, the site index is 75 feet.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Small stones. Rock fragments 3 to 10 inches (7.5 to 25 centimeters) in diameter. Small stones adversely affect the specified use.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characterisitcs of the soil are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those interited from the parent material are called strata.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Slickensides. Polished and grooved surfaces produced by one mass sliding past another. In soils, slickensides may occur at the bases of slip surfaces on the steeper slopes; on faces of blocks, prisms, and columns; and in swelling clayey soils, where there is marked change in moisture content.

Slope. The inclination of the land surface from the horizontal. Percentage of slope is the vertical distance divided by horizontal distance, then multiplied by 100. Thus, a slope of 20 percent is a drop of 20 feet in 100 feet of horizontal distance.

Small stones. Rock fragments 3 to 10 inches (7.5 to 25 centimeters) in diameter. Small stones adversely affect the specified use.

Soil. A natural, three-dimensional body at the earth's surface that is capable of supporting plants and has properties resulting from the integrated effect of climate and living matter acting on earthy parent material, as conditioned by relief over periods of time.

Solum. The upper part of a soil profile, above the C horizon, in which the processes of soil formation are active. The solum in mature soil consists of the A and B horizons. Generally, the characteristics of the material in these horizons are unlike those of the underlying material. The living roots and other plant and animal life characteristics of the soil are largely confined to the solum.

Stones. Rock fragments 10 to 24 inches (25 to 60 centimeters) in diameter.

Stony. Refers to a soil containing stones in numbers that interfere with or prevent tillage.

Stratified. Arranged in strata, or layers. The term refers to geologic material. Layers in soils that result from the processes of soil formation are called horizons; those inherited from the parent material are called strata.

Stripcropping. Growing crops in a systematic arrangement of strips or bands which provide vegetative barriers to wind and water erosion.

Structure, soil. The arrangement of primary soil particles into compound particles or aggregates that are separated from adjoining aggregates. The principal forms of soil structure are--platy laminated), prismatic (vertical axis of aggregates longer than horizontal), columnar (prisms with rounded tops), blocky (angular or subangular), and granular. Structureless soils are either single grained (each grain by itself, as in dune sand) or massive (the particles adhering without any regular cleavage, as in many hardpans).

Subsoil. Technically, the B horizon; roughly, the part of the solum below plow depth.

Subsurface layer. Technically, the A2 horizon. Generally refers to a leached horizon lighter in color and lower in content of organic matter than the overlying surface layer.

Terrace. An embankment, or ridge, constructed across sloping soils on the contour or at a slight angle to the contour. The terrace intercepts surface runoff so that it can soak into the soil or flow slowly to a prepared outlet without harm. A terrace in a field is generally built so that the field can be farmed. A terrace intended mainly for drainage has a deep channel that is maintained in permanent sod.

Texture, soil. The relative proportions of sand, silt, and clay particles in a mass of soil. The basic textural classes, in order of increasing proportion of fine particles, are sand, loamy sand, sandy loam, loam, silt, silt loam, sandy clay loam, clay loam, silty clay loam, sandy clay, silty clay, and clay. The sand, loamy sand, and sandy loam classes may be further divided by specifying "coarse," "fine," or "very fine."

Thin layer. Otherwise suitable soil material too thin for the specified use.

Tilth, soil. The condition of the soil, especially the soil structure, as related to the growth of plants. Good tilth refers to the friable state and is associated with high noncapillary porosity and stable structure. A soil in poor tilth is nonfriable, hard, nonaggregated, and difficult to till.

Toe slope. The outermost inclined surface at the base of a hill; part of a foot slope.

Topsoil (engineering). Presumably a fertile soil or soil material, or one that responds to fertilization, ordinarily rich in organic matter, used to topdress roadbanks, lawns, and gardens.

Upland (geology). Land at a higher elevation, in general, than the alluvial plain or stream terrace; land above the lowlands along streams.

Water table. The upper limit of the soil or underlying rock material that is wholly saturated with water.

> Water table, apparent. A thick zone of free water in the soil. An apparent water table is indicated by the level at which water stands in an uncased borehole after adequate time is allowed for adjustment in the surrounding soil.
>
> Water table, perched. A water table standing above an unsaturated zone. In places an upper, or percehed, water table is separated from a lower one by a dry zone.

Weathering. All physical and chemical changes produced in rocks or other deposits at or near the earth's surface by atmospheric agents. These changes result in disintegration and decomposition of the material.